VOLUME AUTHOR INDEX

Abendschein, D.R., 125
Abou-Donia, M.B., 789
Allessie, M.A., 406
Ando, S., 90
Anversa, P., 495, 503
Apstein, C.S.,745
Asher, M.J., 470
Ashton, J.H., 780
Avolio, A.P., 363
Ayoub, E.M., 651
Ayus, J.C., 575

Bache, R.J., 789
Bagshaw, R.J., 237
Baig, M.M., 651
Bailey, J.C., 660
Bairey, N., 221
Baker, D.G., 476
Baltaxe, H.A., 276
Barrie, W.W., 470
Becker, A.E., 11
Bell, P.R.F., 470
Bentley, S., 470
Berberian, P.A., 520
Berecek, K.H., 619
Bevan, J.A., 22
Biegon, R.L., 353
Bigger, J.T., Jr., 167
Bishop, V.S., 378
Blair, R.W., 378
Bland, R.D., 111
Blaustein, M.P., 463
Bleeker, W.K., 11
Bohr, D.F., 714
Bonke, F.I.M., 406
Borda, L.J., 870
Bouman, L.N., 11
Bressack, M.A., 111
Brier-Russell, D., 84
Britton, S.L., 146, 449
Brooker, G., 553
Brown, A.M., 1
Brown, C.A., 802
Brownling, D.J., 789
Busija, D.W., 696

Carabello, B.A., 430
Carlson, C.J., 125
Clowes, A.W., 625
Coe, N.P., 84
Colatsky, T.J., 543
Coleridge, H.M., 476
Coleridge, J.C.G., 476
Collins, R.E.C., 84
Cook, J.A., 854
Cooper, J.D., 175
Cooper, T.B., 48
Cowley, A.W., Jr., 58
Cox, R.H., 237
Crijns, H., 634
Curfman, G.D., 581

Danilo, P., Jr., 117
Day, A.R., 720
Decker, R.S., 485
de Jong, J.P., 564
Demer, L., 256
De Mey, J.G., 826
Detweiler, D.K., 237
Dietrich, W.D., 37
Domenech, R.J., 29
Downar, E., 612
Durrer, D., 634

Echtenkamp, S., 726
Ellis, A.K., 68
Elzinga, G., 564
Evans, D.H., 470

Fedor, J.M., 214
Ferris, T. F., 739, 755
Fewell, J.E., 125
Fiksen-Olsen, M.J., 146, 449
Finn, W.F., 440
Fiolet, J.W.T., 634
Ford, L.E., 161
Fountain, S.W., 175
Fowler, S., 520
Freer, R.J., 720
Fuchs, R.M., 133

Gallagher, K.P., 190
Gee, M.H., 796
Geis, G.S., 606
Genovesi, S., 395
Gilmore, J.P., 726
Gilmour, R.F., Jr., 814
Goldfischer, S., 520
Goto, J., 90
Granger, H.J., 764
Greenfield, J.C., Jr., 214
Greenway, C.V., 181
Grega, G.J., 264
Griffin, J.C., 599
Gross, F., 619
Grossman, W., 430
Guinn, M.M., 58
Guyton, J.R., 625

Haber, E., 802, 808
Haberl, R., 859
Hagerman, G.R., 48
Hainsworth, R., 77
Halushka, P.V., 854
Harder, D.R., 372
Harrell, F.E., Jr., 789
Heistad, D.D., 696
Henry, P.D., 870
Hermsmeyer, K., 690
Hester, R.K., 771
Hoffman, B.F., 227
Hogan, P.M., 543
Homcy, C.J., 808
Hopkins, B.E., 581
Hopkins, R.A., 731
Hsu, C.H., 646
Humphreys, M.H., 575

Innes, I.R., 181
Iwamoto, G.A., 780

Jagoda, A., 84
Jaillon, P., 599
James, T.N., 48
Janse, M.J., 634
Jones, J.L., 387
Jones, R.E., 387

Karim, F., 77
Karnovsky, M.J., 625
Kaufman, M.P., 476
Kemper, W.S., 190
Kitano, S., 681
Klocke, F.J., 68
Knapp, D.R., 854
Kodama, I., 90
Kontos, H.A., 37
Krieger, W.J.G., 634
Kumada, T., 190
Kurtz, T.W., 646

Lakatta, E.G., 292
Laks, M.M., 530
Lammers, W.J.E.P., 406
Lang, S., 463
Lepeschkin, E., 387
Levin, K.R., 244
Liew, C.C., 513
Linden, J., 553
Lindon, J.N., 84
Lockette, W.E., 714
Longhurst, J.C., 780
Loud, A.V., 495, 503
Luderitz, B., 859

Maciejko, J.J., 264
Mackaay, A.J.C., 11
MacLellan, P., 29
Malinow, M.R., 311
Manning, R.D., Jr., 880
Marcus, M.L., 696
Martin, B.A., 175
Martins, J.B., 100
Marvin, W.J., Jr., 690
Masson-Pévet, M., 1
Masterton, C.E., 789
McDonald, R.I., 690
McIntosh, D.M., 214
McKown, D., 190
Merrill, E.W., 84
Miller, M., 190
Mirro, M.J., 660
Mirsky, I., 530
Moran, N.C., 344
Moréna, H., 634
Moriarity, T.F., 321
Morioka, T., 201
Moss, N.G., 395
Murray, J.F., 125
Musclow, C.E., 175

Nadeau, R.A., 415
Nagelsmit, M.J., 703
Nally, J.V., 739, 755
Navari, R.M., 37
Nishi, K., 201
Norris, C.P., 764

Ogilby, J.D., 745
O'Hara, D.S., 581
Olivetti, G., 495, 503
Oparil, S., 221
O'Rourke, M.F., 363, 731

Page, E., 244
Pappano, A.J., 353
Pascual, R., 22
Paull, W.K., 387
Peach, M.J., 836
Perry, J.B., 415

Piene, H., 564
Plonsey, R., 283
Poole, A.R., 485
Povlishock, J.T., 37
Powell, W.J., Jr., 133
Proskauer, C.C., 387

Rapaport, E., 125
Raymond, R.M., 264
Recordati, G.M., 395
Reis, D.J., 842
Rembert, J.C., 214
Rijnsburger, W.H., 703
Roberge, F.A., 415
Rockson, S.G., 808
Rogenes, P.R., 395
Romero, J.C., 146
Rosen, M.R., 117
Rosenberg, R.D., 625
Roskoski, L.M., 690
Roskoski, R., Jr., 690
Ross, J., Jr., 190
Rothe, C.F., 731
Rudy, Y., 283
Russell, M.P., 344
Rutecki, G.W., 739, 755
Rutlen, D.L., 133

Sagawa, K., 256
Sak, D.P., 264
Salzman, E.W., 84
Savard, P., 415
Schnittger, I., 599
Schuchleib, R., 870
Serizawa, T., 430
Sexton, J.M., 146
Shaw, D.D., 276
Shimizu, T., 378
Shio, H., 520
Shirato, K., 190
Siegal, M.S., 227
Siegel, B., 426
Silver, M.D., 513
Slavicek, J.M., 646
Smith, T.W., 581
Synder, D., 842
Sofola, O.A., 77
Sole, M.J., 513
Spath, J.A., Jr., 796
Spielman, W.S., 449
Spurgeon, H.A., 292
Stanton, C.J., Jr., 575
Steinbeck, G., 406, 859
Stocker, M., 619
Strauss, H.C., 789
Suga, H., 256
Sugahara, K., 201
Sutherland, J.C., Jr., 720
Sutko, J., 332
Switzer, S.J., 58
Sybertz, E. J., 836
Szidon, P., 221

Talman, W.T., 842
Tancredi, R.G., 669
ter Keurs, H.E.D.J., 703
Toyama, J., 90

van Breemen, C., 426
van Heuningen, R., 703
Vanhoutte, P.M., 826
Vinten-Johansen, J., 139

Wald, R.B., 612
Waldo, A.L., 48
Watanabe, A.M., 660
Waxman, M.B., 612
Webb, R.C., 714
Wei, E.P., 37
Weisfeldt, M.L., 292
Weiss, G.B., 771
Weiss, H.R., 139
Weld, F.M., 167
Wenger, T.L., 789
Werness, P.G., 146
White, F., 190
Wigle, E.D., 513
Wildenthal, K., 485
Willerson, J.T., 332, 771
Winkle, R.A., 599
Wise, W.C., 854
Wolf, G.L., 276
Wolinsky, H., Vol. **45:** 546; Vol. **47:** 520
Wood, L.M., 77
Wurster, R.D., 606

Yamada, K., 90
Yin, F.C.P., 292
Yipintsoi, T., 669
Yoshikawa, Y., 201

Zipes, D.P., 100, 814
Zucker, I.H., 726
Zusman, R.M., 802

VOLUME 47 JANUARY–JUNE 1980

VOLUME SUBJECT INDEX

A

Acetylcholine
inhibition of ventricular muscle (chick), 353
inhibitory effect on femoral arteries; interaction with Na^+, K^+ (dog), 826
Acidosis
effects on intra-and extracellular potentials and metabolism in the heart (pig), 634
Action potential duration
cardiac, effects of calcium, current-blocking agents, and stimulation frequency (dog), 543
Action potentials (*see* Potentials)
Acute renal failure
postischemic, enhanced recovery, micropuncture studies (rat), 440
Adenosine
and renal blood flow (dog), 449
role in control of intestinal circulation (dog), 764
Adrenergic neurotransmission
and angiotensin peptides (rabbit), 836
α-Adrenergic activation
coronary artery (dog), 426
β-Adrenergic receptors
interaction, and anti-alprenolol antibodies (rabbit), 808
β_2-Adrenergic receptors
and distribution of coronary blood flow (dog), 29
β_2-Adrenoceptors
absence of vascular innervation (dog), 344
Afterdepolarizations
delayed, pharmacological modification of, 117
Afterload
reduction of, effect on myocardial energetics, 161
AHR-2666
effects on ouabain-induced delayed afterdepolarizations in Purkinje fibers (dog), 117
Alveolar hypoxia (*see* Hypoxia)
Amrinone
cardiac activity of; comments on, 887
Angiotensin I
effect of acute hypoxia on pulmonary conversion to angiotensin II (dog), 221
Angiotensin II
compared with angiotensin III, as vasoconstrictor in mesenteric circulation (dog), 146
exogenous, effect on renal hemodynamics (rat), 646
[sarcosyl]^1-[cysteinyl (*S*-methyl)]^8, noncompetitive antagonist in induced contractions of vascular smooth muscle (guinea pig), 720
Angiotensin III
compared with angiotensin II, as vasoconstrictor in mesenteric circulation (dog), 146
Angiotensin peptides
in vitro neurogenic and musculotropic responses (rabbit), 836
Angiotensin receptors
in renomedullary cells (rabbit), 802
Animals (bird)
acetylcholine inhibition of ventricular muscle, 353
Animals (cat)
abnormalities of the cerebral microcirculation after concussive brain injury, 37
cardiac responses to stimulation of dorsal motor nucleus and nucleus ambiguus, 606
cerebral blood flow during moderate hypertension, 696
effects of splanchnic nerve stimulation on cardiac preload, afterload, and output, 181
pump function of left and right heart, 564
role of vagal afferents in reflex change in refractory period, 378
species comparison of ryanodine inotropies, 332
Animals (chicken)
ultrastructural injury to myocardial cells in vitro after electric countershock, 387
Animals (dog)
absence of vascular β_2-adrenoceptor innervation, 344
adenosine
and intestinal circulation, 764
and renal blood flow, 449
α-adrenergic activation of coronary artery, 426
anticholinergic effects of disopyramide and quinidine on cardiac Purkinje fibers, 660
aortic body chemoreceptors and the heart, 77
atherosclerosis and carotid sinus baroreceptor reflex, 237
autonomic nerve effects on ventricular refractoriness, 100
calcium and Purkinje fiber action potential duration, 227
calcium, frequency, and action potential duration, 543
cardiac vagal C-fiber stimulation by bradykinin, 476
cardiovascular reflexes from capsaicin-stimulated gastric receptors, 780
cerebral blood flow during moderate hypertension, 696
cholinergic relaxation of arterial smooth muscle, 826
coronary collateral flow during tachycardia, 214
distribution of coronary blood flow during β_2-adrenergic receptor activation, 29
effect of dobutamine on systemic capacity, 133
effect of histamine on vascular smooth muscle, 372
effect of lithium on renal renin and prostaglandin E synthesis, 739
effect of preload on perfusion and pressure-flow relationships, 68
effect of vasopressin on arterial pressure, 68
fluid filtration pressure and lung lymph, 796
hypoxia and angiotensin I conversion, 221
instantaneous ventricular pressure, 256
mechanical property changes in hypertrophied muscle, 530
norepinephrine mediation of exocytosis during hypoxic contraction of isolated coronary artery, 870
pacing-induced ischemia, 430
peripheral vasodilation during ventriculography, 276
pharmacological modification of delayed afterdepolarizations in Purkinje fibers, 117
pH-independent effects of lactate in coronaries, 771
positive-pressure ventilation and ventricular volumes, 125
procainamide delivery to ischemic myocardium, 789
propranolol and regional myocardial function, 190
pulmonary vascular impedance analysis of chronically elevated blood flow; comments on, 731
pulsatility index and arterial stenosis, 470
regional $M\dot{V}O_2$ in valvular stenosis, 139
regulation of macromolecular permeability, 264
renal influences on hemodynamics and fluid volumes, 880
repetitive extrasystole and fibrillation thresholds, 599
representation of cardiac electrical activity by moving dipole, 415
response of endocardium and epicardium to combined hyperkalemia, hypoxia, and acidosis, 814

sinus slowing and atrioventricular block with right pulmonary artery stimulation, 48
sodium capillary permeability in isolated lung lobes, 669
species comparison of ryanodine inotropies, 332
vagal efferents in the response to nephrectomy, 575
vascular effects of angiotensins II and III, 146

Animals (guinea pig)
anticholinergic effects of disopyramide and quinidine on atria, 660
contractions of vascular smooth muscle induced by noncompetitive angiotensin antagonist, 720
sodium requirements for effects of ouabain on atrial contraction, 553

Animals (monkey)
cell populations in monkey atherosclerotic aorta, 520
high and low pressure baroreceptor influences on renal nerve activity, 726
regression of atherosclerosis, 311

Animals (pig)
regional ischemia, hypoxia, and hyperkalemia in the isolated heart, 634

Animals (rabbit)
angiotensin and adrenergic neurotransmission, 836
angiotensin receptors in renomedullary cells, 802
anti-alprenolol antibodies, 808
asymmetry of aortic wall (rabbit), 22
atrio-sinus conduction and overdrive suppression, 859
cardiac lysosomal cathepsin D, 485
effects of hypoxia on sinoatrial node cells, 201
effects of stimulation on transmembrane action potentials of sinus node pacemaker cells, 90
effects of systolic stretch on ischemic myocardium, 745
functional and morphological organization of the sinus node, 11
ouabain and the sinus node, 406
plasmalemmal folds and caveolae in cardiac cells, 244
pulmonary leukostasis and pulmonary dysfunction, 175
species comparison of ryanodine inotropies, 332

Animals (rat)
acute renal failure, 440
changes in renal vascular reactivity in deoxycorticosterone hypertension, 619
effect of angiotensin II on renal vasculature, 646
effects of insulin, glucose, and leucine on suppression of myocardial protein degradation, 581
effects of regular swimming activity and its cessation on aortic hydrolase, Vol. **45:** 546
heparin inhibition of arterial myointimal growth, 625
hypertrophy of senescence and aortic binding, 292
lability of blood pressure and A2 lesions, 842
length-dependent activation of cardiac muscle, 703
morphometry of postnatal myocardial development, 495, 503
ontogenesis of cholinergic innervation in the heart, 690
prostaglandins and Na-K ATPase, 714
renal chemoreceptors, 395
sodium pumps and vascular tone, 463
species comparison of ryanodine inotropies, 332
thromboxane synthetase inhibitors and shock, 854
vascular tissue and copper deficiency, 681

Animals (sheep)
antiarrhythmic drugs and unidirectional block, 612
electrophysiological effects of imipramine on cardiac Purkinje and ventricular muscle fibers, 167
lung fluid balance in hypoxic newborn, 111
pulmonary leukostasis and pulmonary dysfunction, 175
thromboresistant materials and survival of platelets, 84

Animals (toad)
hypoxic mitochondrial function and intracellular pH in isolated ventricle strip, 755

Anti-alprenolol antibodies
study of β-adrenergic receptor interaction (rabbit), 808

Antiarrhythmic drugs
effect on depressed conduction and unidirectional block in Purkinje fibers (sheep), 612

Aortic binding
hypertrophy induced by (rat), 292

Aortic chemoreceptors
stimulation of, and responses of the heart (dog), 77

Aortic wall
asymmetry of (rabbit), 22

Arterial pressure (*see* Pressure)

Arterial stenosis (*see* Stenosis)

Arteries
coronary, effect of histamine on vascular smooth muscle (dog), 372
femoral, interaction between Na^+, K^+ exchanges and inhibitory effect of acetylcholine (dog), 826
isolated coronary, hypoxic contraction of (dog), 870
systemic, pulsatile pressure and flow (human), 363

Atherosclerosis
and carotid sinus baroreceptor reflex (dog), 237
and characterization of cell populations isolated from aorta (monkey), 520
regression in (monkey), 311

Atria
and sodium requirements for effects of ouabain on contraction (guinea pig), 553
anticholinergic effects of disopyramide and quinide (guinea pig and dog), 660

Atrio-sinus conduction
and overdrive suppression (rabbit), 859

Atrioventricular block
with right pulmonary artery stimulation (dog), 48

Atropine
and prevention of hemodynamic changes after acute unilateral nephrectomy (dog), 575

Autonomic nervous system
ventricular refractoriness (dog), 100

Axons
myelinated, baroreceptors under pressure, 1
unmyelinated, baroreceptors under pressure, 1

B

Baroreceptors
an update, 1
influence on renal nerve activity (monkey), 726

Blood flow
cerebral, during moderate hypertension (dog, cat), 696
coronary
collateral, effects of exercise-induced tachycardia (dog), 214
transmural, ventricular distribution during β_2-adrenergic receptor activation (dog), 29
pulmonary vascular impedance analysis; comments on (dog), 731
renal, effect of adenosine on distribution (dog), 449
systemic, cardiac and vascular factors, comments on, 590

Blood pressure
and A2 lesions (rat), 842

Bradykinin
stimulation of cardiac vagal C-fibers (dog), 476

Brain injury
concussive, and abnormalities of the cerebral microcirculation (cat), 37
Brainstem
arterial pressure produced by destruction of A2 catecholaminergic neurons (rat), 842

C

Calcium
channel-blocking agents and action potential duration (dog), 543
effect on Purkinje fiber action potential duration in presence of agents affecting potassium permeability (dog), 227
external, and action potential duration (dog), 543
Capillary permeability
sodium, in isolated lung lobes (dog), 669
Capsaicin
stimulation of gastric receptors and resulting cardiovascular reflexes (dog), 780
Carbohydrates
complex, metabolism by fibroblasts (human), 651
Cardiac activity
and amrinone-win 40680 [5-amino-3-4'-bypyridin-6(1HO-one]; comments on, 887
Cardiac cells
plasmalemmal folds and caveolae (rabbit), 244
Cardiac myocytes
distribution of lysosomal cathepsin D (rabbit), 485
Cardiac output
effects of splanchnic nerve stimulation (cat), 181
Cardiac vagal C-fibers
stimulation by bradykinin (dog), 476
Cardiovascular reflexes
and capsaicin-stimulated gastric receptors (dog), 780
Catecholamine
dobutamine, effect on systemic capacity (dog), 133
Cathepsin D
lysosomal, distribution in cardiac myocytes (rabbit), 485
Catheter
transvenous electrode, in right pulmonary artery, effects on sinus rate and atrioventricular conduction (dog), 48
Caveolae
and plasmalemmal folds in cardiac cells (rabbit), 244
Cell populations
characterization of, in experimental atherosclerosis (monkey), 520
Cells (*see also* various cell types)
interstitial, identification of angiotensin receptor in tissue culture (rabbit), 802
sinoatrial node, effects of hypoxia on (rabbit), 201
sinus node pacemaker, effects of stimulation on transmembrane action potentials, 90
Cerebral microcirculation
in brain injury (cat), 37
Cholinergic innervation
ontogenesis in the heart (rat), 690
Circulation
intestinal, role of adenosine in local control (dog), 764
mesenteric, comparison of angiotensins II and III (dog), 146
Copper deficiency
membrane and contractile properties of vascular tissue (rat), 681
Coronary artery
mechanism of α-adrenergic activation (dog), 426
pH-independent effects of lactate (dog), 771
Coronary perfusion
effects of preload (dog), 68
Coronary stenosis
and pacing-induced ischemia (dog), 430

D

Deoxycorticosterone
and changes in renal vascular reactivity during hypertension (rats), 619
Disopyramide
anticholinergic effects on atria (guinea pig) and cardiac Purkinje fibers (dog), 660
Dobutamine
effect on systemic capacity (dog), 133
Dorsal motor nucleus
cardiac responses during stimulation of (cat), 606

E

Edema
fluid filtration pressure and lung lymph (dog), 796
Electric countershock
ultrastructural injury to myocardial cells in vitro (chick), 387
Electrical activity
cardiac, moving dipole (dog), 415
End-diastolic volume (*see* Volume)
Endocardium
effects of autonomic nerve interventions, comparison with epicardium (dog), 100
response to hyperkalemia, hypoxia, and acidosis (dog), 814
Endotoxic shock (*see* Shock)
Epicardium
effects of autonomic nerve interventions, comparison with endocardium (dog), 100
response to hyperkalemia, hypoxia, and acidosis (dog), 814
Extrasystole threshold
relationship to ventricular fibrillation threshold (dog), 599

F

Fasting
effects of insulin, glucose, and leucine on suppression of myocardial protein degradation (rat), 581
Fibrillation threshold
relationship to extrasystole threshold (dog), 599
Fibroblasts
rheumatic, and metabolism of complex carbohydrates (human), 651
Fluid volume (*see* Volume)

G

Glucose
effects on suppression of myocardial protein degradation during fasting (rat), 581

H

Heart
electrophysiological effects of imipramine, (sheep), 167
left and right ventricular pump function, and consequences of having two pumps (cat), 564

quantification of pump function, 301
regional ischemia, hypoxia, and hyperkalemia (pig), 634
response to stimulation
of aortic body chemoreceptors (dog), 77
of the dorsal motor nucleus and nucleus ambiguus (cat), 606
Hemodynamics
renal influences on, after volume loading (dog), 880
Heparin
inhibition of arterial myointimal growth (rat), 625
High cholesterol diets
and atherosclerosis (monkey), 311
Histamine
and contractions in aortic strip (rabbit), 22
effect on vascular smooth muscle (dog), 372
vasoactive substances, and macromolecular permeability (dog), 264
Hyperkalemia
effects on intra- and extracellular potentials and metabolism in the heart (pig), 634
Hyperlipemia
associated arterial hemodynamics (dog), 237
Hypertension
changes in renal vascular reactivity caused by deoxycorticosterone (rat), 619
Hypertrophy
induction by senescence and by aortic banding (rat), 292
Hypoxia
acute, effect on conversion of angiotensin I to angiotensin II (dog), 221
alveolar, lung fluid balance (lamb), 111
changes in mitochondrial function and intracellular pH during (toad), 755
effects on intra- and extracellular potential and metabolism in the heart (pig), 634
Hypoxic coronary contraction
mediation by potassium-dependent exocytosis of norepinephrine (dog), 870
Hypoxic solution
effects on sinoatrial node cells (rabbit), 201

I

Imipramine
cardiac electrophysiological effects (sheep), 167
Insulin
effects on suppression of myocardial protein degradation during fasting (rat), 581
Intracellular pH
changes in, during hypoxia in isolated ventricle strip (toad), 755
Ischemia
effects on intra- and extracellular potentials and metabolism in the heart (pig), 634
pacing-induced, effect on left ventricular diastolic pressure-volume relations (dog), 430

K

Kidney
adenosine and renal blood flow (dog), 449
recovery from postischemic acute renal failure (rat), 440
renal influences on hemodynamics and fluid volumes (dog), 880

L

Lactate
pH-independent effects of, in coronaries (dog), 771
Law of Laplace
its limitations, 321
Leucine
effects on suppression of myocardial protein degradation during fasting (rat), 581
Leukostasis
pulmonary, relationship to pulmonary dysfunction (sheep and rabbit), 175
Lidocaine
effects on ouabain-induced delayed afterdepolarizations in Purkinje fibers (dog), 117
Lithium
effect on renal renin and prostaglandin E synthesis (dog), 739
Lung
fluid
effect of alveolar hypoxia (lamb), 111
filtration system, dynamics of, in edema (dog), 796
sodium capillary permeability in (dog), 669

M

Macromolecular permeability (*see* Permeability)
Microelectrode technique
in study of sinus node (rabbit), 11
Micropuncture studies
acute renal failure (rat), 440
Microspheres (*see also* Radionuclide studies)
measurement of afferent arteriolar diameter (rat), 646
Mitochondrial function
changes in, during hypoxia in isolated ventricle strip (toad), 755
Models
epicardial and body surface potentials, 283
Lamé
thick hollow sphere subjected to internal or external pressure, 321
Law of Laplace, limitations of, 321
Rivlin-Saunders, same as Valanis-Landel except for uniaxial stress-stretch relation, 321
Valanis-Landel
effects of deformation of the left ventricle, nonlinear stress-stretch behavior of papillary muscle, and thickness of left ventricular wall, 321
nonhomogeneous, 321
Morphometry
and postnatal myocardial development (rat), 495, 503
Moving dipole
representation of cardiac electrical activity for normal and ectopic beats (dog), 415
Muscle
arterial smooth
cholinergic relaxation (dog), 826
inhibition of cell proliferation by heparin (rat), 625
cardiac, length-dependent activation (rat), 703
from hypertrophied hearts, properties of (rat), 292
vascular smooth
contractions induced by noncompetitive antiotensin antagonist (guinea pig), 720
effect of histamine (dog), 372

ventricular, acetylcholine inhibition (chick), 353
Myocardial dysfunction
exercise-induced, reduction by propranolol (dog), 190
Myocardial energetics
and afterload, 161
Myocardium (*see* Muscle, cardiac)
alteration of contractile state by ryanodine (rat), 332
ischemic
effects of systolic stretch (rabbit), 745
rapid intravenous administration of procainamide (dog), 789
ventricular (left and right), morphometric study of early postnatal development (rat), 495, 503

N

Na-K ATPase
and prostaglandins, role in potassium relaxation (rat), 714
Nephrectomy
acute unilateral, prevention of hemodynamic changes by vagotomy or use of atropine (dog), 575
Neurons
A2 catecholaminergic, and chronic lability of arterial pressure in brainstem (rat), 842
Norepinephrine
and contractions in aortic strip (rabbit), 22
mediation of exocytosis in hypoxic contraction of isolated coronary artery (dog), 870
Nucleus ambiguus
cardiac responses during stimulation of (cat), 606

O

Ontogenesis
and cholinergic innervation (rat), 690
Ouabain
effect on isolated sinus node preparation (rabbit), 406
induction of delayed afterdepolarizations in Purkinje fibers (dog), 117
sodium requirement for effects on atrial contraction (guinea pig), 553
Overdrive suppression
and atrio-sinus conduction (rabbit), 859

P

Perfusion
coronary, effects of preload (dog), 68
Permeability
macromolecular, regulation of (dog), 264
Plasmalemmal folds
and caveolae in cardiac cells (rabbit), 244
Platelets
^{51}Cr-labeled, survival of (sheep), 84
Potentials
body surface and epicardial, comparison of volume conductor and source geometry effects, 283
calcium and Purkinje fiber action potential duration (dog), 227
transmembrane action, effects of overdrive on sinus node pacemaker cells (rabbit), 90
Pressure
arterial
and destruction of A2 catecholaminergic neurons in brainstem (rat), 842
influence of vasopressin on (dog), 58
cerebral, effects of sympathetic nerves during increases in (dog, cat), 696
instantaneous ventricular, determinants of (dog), 256
pulsatile, in systemic arteries (human), 363
Pressure-flow relationship
effects of preload (dog), 68
Pressure gradient
for venous return or caused by venous return? reply to letter, 590
Pressure overload
and mechanical properties of right and left ventricles during hypertrophy (dog), 530
Procainamide
and the ischemic myocardium (dog), 789
Propranolol
reduction of exercise-induced regional myocardial dysfunction (dog), 190
Prostaglandin biosynthesis
angiotensin receptors in renomedullary cells (rabbit), 802
Prostaglandin E synthesis
acute effect of lithium (dog), 739
Prostaglandins
and potassium relaxation in vascular smooth muscle (rat), 714
Protein degradation
myocardial, supression of, during fasting (rat), 581
Proteins
nonhistone nuclear, in hearts with muscular subaortic stenosis (human), 513
Pulmonary dysfunction
and its relationship to pulmonary leukostasis (sheep and rabbit), 175
Pulmonary leukostasis (*see* Leukostasis)
Pulsatility index
and arterial stenosis (dog), 470
Pump
sodium, in control of vascular tone (rat), 463
Pump function
left and right ventricular, and consequences of two pumps in one heart (cat), 564
Purkinje fibers
action potential duration, calcium and (dog), 227
anticholinergic effects of disopyramide and quinidine (guinea pig and dog), 660
effect of antiarrhythmic drugs on depressed conduction and unidirectional block (sheep), 612
ouabain-induced delayed afterdepolarizations
effects of AHR-2666 (dog), 117
effects of lidocaine (dog), 117
effects of tetrodotoxin (dog), 117
effects of verapamil (dog), 117

Q

Quinidine
anticholinergic effects on atria (guinea pig) and cardiac Purkinje fibers (dog), 660

R

Radionuclide studies
assessment of thromboresistant materials by determination of platelet survival (sheep), 84

Receptors
β_2-adrenergic, distribution of coronary blood flow (dog), 29
chemoreceptors, response of heart to stimulation (dog), 77
under pressure, 1
Refractory period
reflex change (cat), 378
Regional $M\dot{V}O_2$
in valvular stenosis (dog), 139
Renal nerve
activity, high and low pressure baroreceptor influences on (monkey), 726
Renal receptors
chemical alterations (rat), 395
Renal vasculature
effect of exogenous angiotensin II (rat), 646
Renin
and prostaglandin synthesis with lithium (dog), 739
Ryanodine
alteration of contractile state of ventricular myocardium (rat), 332

S

Senescense
hypertrophy induced by (rat), 292
Shock
endotoxic, protective effects of thromboxane synthetase inhibitors (rat), 854
Sinoatrial node cells
effects of hypoxia on (rabbit), 201
Sinus node
and ouabain (rabbit), 406
functional and morphological organization (rabbit), 11
isolated, effects of atrial pacing on atrio-sinus conduction and overdrive suppression (rabbit), 859
Sinus rate
effects produced by stimulation from transvenous electrode catheter in right pulmonary artery (dog), 48
Sodium
capillary permeability in isolated lung (dog), 669
Sodium pump
in control of vascular tone (rat), 463
Sodium restriction
in vitro neurogenic and musculotropic responses to angiotensin peptides during (rabbit), 836
Splanchnic venoconstriction
Stenosis
chronic coronary artery, reduction of myocardial dysfunction by propranolol (dog), 190
coronary, and pacing-induced ischemia (dog), 430
muscular subaortic, and nonhistone nuclear proteins (human), 513
proximal arterial, relationship to ultrasonic pulsatility index (dog), 470
valvular, and regional $M\dot{V}O_2$ (dog), 139
Subjects (human)
nonhistone nuclear proteins in muscular subaortic stenosis, 513
pulsatile flow and pressure in systemic arteries, 363
rheumatic and normal, metabolism of complex carbohydrates by fibroblasts, 651
Systolic stretch
effects on ischemic myocardium (rabbit), 745

T

Tachycardia
exercise-induced, effects on coronary collateral flow (dog), 214
Tetrodotoxin
effects on ouabain-induced delay afterdepolarizations in Purkinje fibers (dog), 117
Thromboresistant materials
assessment of, by determination of platelet survival (sheep), 84
Thromboxane
protective effects during endotoxic shock (rat), 854
Tissue
vascular, membrane and contractile properties under copper-deficient conditions (rat), 681
Trabeculae
cardiac, tension development and sarcomere length (rat), 703
Transmembrane potentials (*see* Potentials)
Tricyclic antidepressants
imipramine, cardiac electrophysiological effects (sheep), 167

U

Ultrastructural injury
electrically induced, to myocardial cells (chick), 387

V

Vagal afferents
role in reflex control of left ventricular refractory period (cat), 378
Vagotomy
prevention of hemodynamic changes after acute unilateral nephrectomy (dog), 575
Valvular stenosis (*see* Stenosis)
Vascular reactivity
changes during various stages of deoxycorticosterone hypertension (rat), 619
Vascular tone
role of sodium pump (rat), 463
Vasodilation
β-adrenergically mediated (dog), 344
peripheral, during ventriculography (dog), 276
Vasopressin
arterial pressure control system (dog), 58
Vasopressors
comparison of angiotensin II and angiotensin III in the mesenteric circulation (dog), 146
Ventilation
continuous positive-pressure, and right and left ventricular end-diastolic volumes (dog), 125
Ventricles
left
determinants of instantaneous pressure (dog), 256
mathematical models, limitations of Law of Laplace, 321
oxygen consumption in subepicardial and subendocardial regions (dog), 139
reflex change in refractory period (cat), 378

left and right
mechanical property changes in hypertrophied muscle caused by pressure overload (dog), 530
Ventricular refractoriness
autonomic nerve effects on (dog), 100
Ventriculography
peripheral vasodilation during (dog), 276
Verapamil
effects on ouabain-induced delayed afterdepolarizations in Purkinje fibers (dog), 117
Volume
end-diastolic, and continuous positive-pressure ventilation (dog), 125
fluid, renal influences on (dog), 880

Circulation Research

VOLUME 46 JANUARY–JUNE 1980

SUPPLEMENT AUTHOR INDEX

Adam, W.R., I-101
Adams, R.J., I-154
Aguilera, G., I-118
Angus, J.A., I-64

Baker, S.P., I-38
Barlow, J.W., I-83
Baukal, A., I-118
Baxter, J.K., I-94
Baxter, R.C., I-110
Biglieri, E.G., I-94
Black, J.W., I-64
Blombery, P.A., I-26
Bobik, A., I-43, I-47, I-49
Boutagy, J., I-167
Brown, L., I-167
Burnstock, G., I-175
Butkus, A., I-88

Carson, V., I-43
Casley, D.J., I-128
Catt, K.J., I-118
Clark, B.J., I-59
Coghlan, J.P., I-88, I-135, I-142
Coutard, M., I-103
Culvenor, A.J., I-15, I-33

De Meyts, P., I-3
Denton, D.A., I-88
Dorward, P.K., I-26
Drummer, O., I-33
Duggan, A.W., I-149
Dusting, G.J., I-183

Esler, M.D., I-47, I-49

Fei, D.T.W., I-135
Fernley, R.T., I-135
Frean, G.J., I-26
Funder, J.W., I-83, I-101, I-103

Gelbart, A., I-167, I-173
Glover, W.E., I-57
Goldman, R.H., I-173
Graham, W.F., I-88

Hall, R.J., I-173
Harrison, L.C., I-116
Hope, W., I-77
Humphrey, T.J., I-88

Jackman, G., I-47
Jarrott, B., I-15, I-33
Jennings, G.L., I-47, I-49
Johnston, C.I., I-45, I-128

Kelleher, D., I-47
Kobinger, W., I-21
Korner, P.I., I-1, I-26, I-43, I-47, I-49

Lan, N.C., I-94
Letts, L.G., I-51
Lillie, C., I-21
Louis, W.J., I-15, I-33

Majewski, Harry, I-70
Majewski, Henryk, I-77
Malta, E., I-53
Marver, D., I-101
Matthews, P.G., I-128
Matulich, D.T., I-94
McCulloch, M.W., I-70, I-77
McGrath, B.P., I-128
McKenzie, J.K., I-94
McPherson, G.A., I-53
Medgett, I.C., I-70
Menninger, K., I-59
Mercer, J.E., I-101
Millar, J.A., I-128
Moulds, R.F.W., I-80

Nayler, W.G., I-161
Nestel, P.J., I-106
New, M.I., I-94

O'Donnell, S.R., I-55
Oliva, J.-M., I-161
Oliver, J.R., I-43
Osborne-Pellegrin, M., I-103

Pearce, P., I-103
Pichler, L., I-21
Potter, L.T., I-38

Rand, M.J., I-70, I-77
Raper, C., I-53
Rittinghausen, R., I-80
Rousseau, G.G., I-3

Schirar, A., I-118
Schwartz, A., I-154
Scoggins, B.A., I-88, I-135
Shaw, J., I-80
Skews, H., I-47
Spector, S., I-138
Stockigt, J.R., I-94
Story, D.F., I-70, I-77
Summers, R.J., I-15

Temple, D.M., I-51
Thomas, R., I-167
Tregear, G.W., I-135, I-142
Turner, P., I-10
Turtle, J.R., I-110

Ulick, S., I-101

Vane, J.R., I-183

Wanstall, J.C., I-55
Weil, D., I-103
Whitworth, J.A., I-88
Williams, A.J., I-161
Williams, L.R., I-51
Williams, P.F., I-110
Winter, J.S.D., I-94
Woodcock, E.A., I-45

Circulation Research

VOLUME 46 JANUARY–JUNE 1980

SUPPLEMENT SUBJECT INDEX

A

Adenosine
mono-, di-, and triphosphates
and purinergic receptors in the heart, I-175
Adenosine monophosphate
cyclic generation of, by lymphocytes (human), I-49
Adenosine triphosphatase
activity, reduction by verapamil (rabbit), I-161
Adenylyl cyclase activity
and cardiac β-adrenoceptors, in heart (rabbit), I-43
Adrenal glomerulosa cells
and angiotensin II receptors (rat), I-118
Adrenergic receptors
cardiovascular, in experimental hypertension (rat), I-45
α-Adrenoceptor
central cardiovascular, relation to peripheral receptors (rat), I-21
differences in time-course of responses to, and of responses to H_1- and H_2-histamine receptor stimulation (human, rabbit), I-57
α-Adrenoceptor activities
of norepinephrine analogues in isolated tissues (rat), I-33
α-Adrenoceptor clonidine
characterization, of, by means of radiolabeled agonists and antagonists (rat and guinea pig), I-15
β-Adrenoceptor
cardiac
adenylyl cyclase activity in the heart (rabbit), I-43
biochemical studies in indicating clinical significance (dog and rat), I-38
cardioselective blocking actions of 2-methoxyphenylethanolamines (guinea pig), I-51
central nervous system, role in cardiovascular action of propranolol (rabbit), I-26
differences in time-course of responses, and of responses to H_1- and H_2-histamine receptor stimulation (human, rabbit), I-57
β-Adrenoceptor activities
of norepinephrine analogues in isolated tissues (rat), I-33
β-Adrenoceptor populations
differences influencing atrial rate (guinea pig, cat), I-55
Aldosterone
role in mineralocorticoid-excess states (rat), I-94
Aldosterone antagonists
radioreceptor assay approach to evaluation (rat), I-101
Amitriptyline
and cardiac H_2-receptor blockade (guinea pig), I-64
Angiotensin blockade
hormonal responses to (rat), I-128
Angiotensin II
peripheral production (sheep), I-135
Angiotensin II receptors
properties and regulation in adrenal glomerulosa cells (rat), I-118
Angiotensins II and III
peripheral production (sheep), I-135
Animals (cat)
influence of β-adrenoceptor populations on atrial rate, I-55
studies on the digitalis receptor, I-154
Animals (cow)
heterogeneity of glucocorticoid receptors, I-83
Animals (dog)
cardiac β-adrenoceptors, biochemical studies of, and clinical significance, I-38
cardiovascular properties not shared by prostaglandin E_2 (PGE_2) and prostacyclin (PGI_2), I-183
effects of hypokalemia on cardiotropic actions of digoxin, I-173
enkephalin, endorphin, and the opiate receptor, I-142
in vitro study of effects of peripheral dopamine receptors, I-59
lipoprotein protein receptors and atherosclerosis, I-106
Animals (guinea pig)
α-adrenoceptor radioligand assays, I-15
assay of cardiac H_2-receptor blockade by amitriptyline and lysergic acid diethylamide, I-64
cardioselective β-adrenoceptor blocking of 2-methoxyphenylethanolamines, I-51
influence of β-adrenoceptor populations on atrial rate, I-55
opiate receptors and their clinical implications, I-138
studies on the digitalis receptor, I-154
Animals (mouse)
enkephalin, endorphin, and the opiate receptor, I-142
heterogeneity of glucocorticoid receptors, I-83
Animals (rabbit)
cardiac β-adrenoceptors and adenylyl cyclase activity in heart during altered sympathetic activity, I-43
cardiovascular receptors and calcium, I-161
differences in time-course of responses to α- and β-adrenoceptor, and of responses to H_1- and H_2-histamine receptor stimulation, I-57
modulatory role of dopamine in sympathetic transmission, I-77
role of central nervous system β-receptors, I-26
studies on the digitalis receptor, I-154
Animals (rat)
α-adrenoceptor radioligand assays, I-15
angiotensin II receptors in adrenal glomerulosa cells, I-118
cardiac β-adrenoceptors, biochemical studies of, and clinical significance, I-38
cardiovascular adrenergic receptors in experimental hypertension, I-45
central and peripheral α-adrenoceptors, I-21
effects of adrenalectomy, corticosterone, and dexamethasone, I-83
effects of estrogen on intimal lesions in caudal artery, I-103
enkephalin, endorphin, and the opiate receptor, I-142
hormonal responses to angiotensin blockade, I-128
lipoprotein protein receptors and atherosclerosis, I-106
opiate receptors and their clinical implications, I-138
radioreceptor assay of aldosterone antagonists, I-101
radioreceptor assay of plasma mineralocorticoid activity, I-94
receptors for insulin and insulin-like molecules, I-110
structure-activity relationships of adrenoceptor analogues, I-33
studies on the digitalis receptors, I-154
Animals (sheep)
intact, effect of cortisol, aldosterone, and other steroids, I-83
peripheral production of angiotensin II and III, I-135
steroid receptors and hypertension, I-88
Artery
caudal, effects of estrogen on intimal lesions (rat), I-103
digital, effect of prejunctional receptors (human), I-80
Atherosclerosis
and lipoprotein protein receptors (dog, rat, other animal species), I-106
Atrial rate
influenced by differences in β-adrenoceptor populations (guinea pig, cat), I-55
Autonomic insufficiency
idiopathic, and norepinephrine (human), I-47

B

Blockade
angiotensin, hormonal responses to (rat), I-128

C

Calcium
and cardiovascular receptors (rabbit), I-161
Cardiac β-adrenoceptors (*see* β-Adrenoceptors)
Cardiovascular receptors (*see also* Receptors)
molecular, pharmacological, and therapeutic aspects: Introduction, I-1
Caudal artery (*see* Artery)
Cells
adrenal glomerulosa, and angiotensin II receptors (rat), I-118
Central nervous system
enkephalins as transmitters, I-149
Clinical implications
of the receptor concept, I-10
Clonidine
cause of cardiovascular depression (rat), I-21
use as ligand for receptor assay in brain (rat), I-15
Cortisol
role in mineralocorticoid-excess states (rat), I-94

D

Deoxycorticosterone
role in mineralocorticoid-excess states (rat), I-94
Digitalis
in treatment of acute and chronic congestive heart failure (cat, guinea pig, rabbit, rat), I-154
Digitalis receptor (*see* Receptor)
Digoxin
cardiotropic actions of, effects of hypokalemia (dog), I-173
Dopamine
role in sympathetic transmission (rabbit), I-77
Dopamine receptors
peripheral, study of effects, in vitro (dog, human), I-59

E

Endorphin
and the opiate receptor (human, dog, mouse, rat), I-142
Enkephalins
and the opiate receptor (human, dog, mouse, rat), I-142
transmitters in the central nervous system, I-149
Estrogen
effects on intimal lesions in caudal artery (rat), I-103
Evolution
in receptor concepts, I-3

G

Glucocorticoid receptors (*see* Receptors)

H

Heart
purinergic receptors in, I-175
Histamine receptor stimulation
H_1- and H_2-, responses to (rabbit, human), I-57
H_2-Receptors
cardiac, blockade by amitriptyline and lysergic acid diethylamide (guinea pig), I-64
Hypertension
and steroid receptors (sheep), I-88
experimental, and cardiovascular adrenergic receptors (rat), I-45
Hypokalemia
effects on cardiotropic actions of digoxin (dog), I-173

I

Insulin
receptors for (rat, human), I-110
Insulin-like molecules
receptors for (rat, human), I-110
Insulin receptor autoantibodies
clinical and molecular aspects (human), I-116
Intimal lesions
caudal artery, protective effects of estrogen (rat), I-103
Introduction, I-1
Isoproterenol
chronotropic response to (human), I-49

L

Lymphocytes
generation by cyclic adenosine monophosphate (human), I-49
Lysergic acid diethylamide
and cardiac H_2-receptor blockade (guinea pig), I-64

M

2-Methoxyphenylethanolamine
cardioselective β-adrenoceptor blocking actions (guinea pig), I-51
Model
receptor, and inhibition of Na^+,K^+-ATPase, I-167
Molecules
insulin-like, receptors for (rat, human), I-110
Muscle
cardiac, effects of purinergic receptors, I-175
ventricular, isolation by differential centrifugation and discontinuous sucrose gradient techniques (rabbit), I-161

N

Na^+,K^+-ATPase
cardiac, inhibition of; correlation with effects of hypokalemia on cardiotropic actions of digoxin (dog), I-173
inhibition by digitalis (cat, guinea pig, rabbit, rat), I-154
inhibition of, as determined by receptor model, I-167
Neuroeffector transmission
autonomic, modulation by prejunctional receptors (human), I-70
Norepinephrine
kinetics of, in idiopathic autonomic insufficiency (human), I-47
Norepinephrine analogues
α- and β-adrenoceptor activities of, in isolated tissues (rat), I-33
^{3}H-Norepinephrine
and effect of prejunctional receptors in digital arteries (human), I-80

O

Opiate receptor (*see* Receptor)
Ouabain
in treatment of acute and chronic congestive heart failure (cat, guinea pig, rabbit, rat), I-154

P

Palmitylcarnitine (Pcarn)
modulation of ouabain binding in vivo (cat, guinea pig, rabbit, rat), I-154
Phenoxypropanolamines
as selective β_1-receptor agonists (cat), I-53
Phenylethanolamines (*see* 2-Methoxyphenylethanolamine)
Plasma mineralocorticoid activity
role of aldosterone, cortisol, and deoxycorticosterone (rat), I-94
Prazosin
use as ligand for receptor assay in brain and seminal vesicle (guinea pig), I-15
Prejunctional receptor (*see* Receptor)
Propranolol
cardiovascular action and role of central nervous β-adrenoceptors (rabbit), I-26
Prostacyclin
cardiovascular properties of (dog), I-183

Prostacyclin (PGI_2)
cardiovascular properties not shared by prostaglandin E_2 (PGE_2) (dog), I-183
Prostaglandin E_2 (PGE_2)
cardiovascular properties not shared by prostacyclin (PGI_2) (dog), I-183
Purinergic receptor (*see* Receptor)

R

Radioimmunoassay
in study of enkephalin, endorphin, and the opiate receptor (human, dog, mouse, rat), I-142
Radioreceptor assay
evaluation of more specific aldosterone antagonists (rat), I-101
Receptor
digitalis
inferences from structure-activity relationship studies, I-167
studies on (cat, guinea pig, rabbit, rat), I-154
opiate, effects of enkephalin and endorphin (human, dog, mouse, rat), I-142
Receptor concept
a century of evolution, I-3
clinical implications, I-10
cardiovascular, and calcium (rabbit), I-161
for insulin and insulin-like molecules (rat, human), I-110
glucocorticoid, heterogeneity of (cow, mouse, rat, sheep), I-83
insulin, autoantibodies; clinical and molecular aspects (human), I-116
lipoprotein protein, relationship to atherosclerosis (dog, rat, other animal species), I-106
opiate, clinical implications (human, guinea pig, rat), I-138
prejunctional
effect on neurotransmitter release in digital arteries (human), I-80
modulating autonomic neuroeffector transmission (human), I-70
purinergic (P_1 and P_2), in the heart, I-175
steroid, and hypertension (sheep), I-88

S

Saralasin
hormonal responses to blockade of renin-angiotensin system (rat), I-128
SQ14,225 (captopril)
converting enzyme inhibition, and hormonal responses to angiotensin blockade (rat), I-128
Steroid receptor (*see* Receptor)
Structure-activity relationship
studies of the digitalis receptor, I-167
Subjects (human)
differences in time-course of responses to α- and β-adrenoceptor, and of responses to H_2- and H_2-histamine receptor stimulation, I-57
enkephalin, endorphin, and the opiate receptor, I-142
insulin receptor autoantibodies, clinical and molecular aspects, I-116
modulation of autonomic neuroeffector transmission by prejunctional receptors, I-70
norepinephrine kinetics in idiopathic autonomic insufficiency, I-47
opiate receptors and their clinical implications, I-138
prejunctional receptors in digital arteries, I-80
receptors for insulin and insulin-like molecules, I-110
relationship between chronotropic response to isoproterenol and generation of cyclic AMP by lymphocytes, I-49
study of effects of peripheral dopamine receptors, I-59
Sympathetic transmission
modulatory role of dopamine (rabbit), I-77

V

Verapamil
reduction of Ca^{2+} binding and Ca^{2+}-activated ATPase activity (rabbit), I-161

W

^{3}H-WB 4101
use as ligand for receptor assay in cerebral cortex (rat), I-15

American Heart Association
National Research Program

Grants-In-Aid

1981-1982

Awarded by the American Heart Association to support research activities broadly related to cardiovascular function and disease or to related fundamental problems. Support available for all basic disciplines — such as physiology, biochemistry, pathology — as well as for epidemiological and clinical investigations which bear on cardiovascular problems, including stroke.

- 1 to 3-year research projects in nonprofit institutions and based primarily on scientific excellence

  investigator must not already have substantial funding for the research effort and the facilities available for the research should be adequate

- Proposals from talented, young investigators are encouraged
- Doctoral degree required at the time of award activation with very rare exceptions
- At any given time an individual may hold only *one* Grant-in-Aid from the Association's National Program

Application Receipt Deadline
October 1, 1980

Information: Director of Research Awards
American Heart Association
7320 Greenville Avenue
Dallas, Texas 75231

(Application deadline for Established Investigatorships, Clinician-Scientist Awards, and British-American Fellowships is July 1, 1980)

43-034A (1980)

Circulation Research

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

VOLUME 46

January–June

1980

AMERICAN HEART ASSOCIATION, INC.

Circulation Research

An Official Journal of the American Heart Association

Circulation Research provides a medium for bringing together basic research on the cardiovascular system from various disciplines including biology, biochemistry, biophysics, morphology, pathology, physiology, and pharmacology. The Journal also will accept for publication manuscripts on clinical research that contribute to an understanding of fundamental problems.

Editor
BRIAN F. HOFFMAN

Associate Editor
MICHAEL R. ROSEN

Editorial Office: Department of Pharmacology, College of Physicians and Surgeons, 630 West 168th Street, New York, New York 10032

EDITORIAL BOARD

NORMAN R. ALPERT
ROBERT J. BACHE
ROGER C. BARR
ARTHUR L. BASSETT
DEREK BERGEL
JOHN A. BEVAN
COLIN M. BLOOR
F. NORMAN BRIGGS
ARTHUR M. BROWN
EDWARD CARMELIET
ROBERT B. CASE
SHU CHIEN
PAUL F. CRANEFIELD
JAMES O. DAVIS
DAVID E. DONALD
JAMES M. DOWNEY
S. EVANS DOWNING
GEORGE I. DRUMMOND
DIRK DURRER
ALEXANDRE FABIATO
ERIC O. FEIGL
CARLOS M. FERRARIO
HARRY A. FOZZARD
JOHN W. FUNDER
W. RAY GIBBONS
JOSEPH P. GILMORE
JOSEPH C. GREENFIELD, JR.
FRANCIS J. HADDY
JOEL HARDMAN
LLOYD L. HEFNER
DONALD D. HEISTAD
MICHAEL HEYMANN
JULIEN I.E. HOFFMAN
NORMAN K. HOLLENBERG
ROBERT B. JENNINGS
BÖRJE JOHANSSON
PHILIP A. KHAIRALLAH
HERMES A. KONTOS
MATTHEW N. LEVY
THOMAS C. LLOYD, JR.
MELVIN L. MARCUS
JEAN M. MARSHALL
PAUL MARTIN
JOHN C. MCGIFF
ISRAEL MIRSKY
JAMES R. NEELY
RAY A. OLSSON
SOLBERT PERMUTT
BERTRAM PITT
MICHAEL J. PURVES
EUGENE M. RENKIN
KIICHI SAGAWA
ANTONIO SCARPA
JAMES SCHEUER
EVELINE E. SCHNEEBERGER
SIDNEY S. SCHREIBER
ARTIN A. SHOUKAS
LEONARD T. SKEGGS
BURTON E. SOBEL
ANDREW P. SOMLYO
MADISON S. SPACH
HAROLD C. STRAUSS
S. P. SUTERA
MERRILL TARR
AUBREY E. TAYLOR
ROBERT E. TEN EICK
MARIO VASSALLE
HSUEH-HWA WANG
AUGUST M. WATANABE
JOHN B. WEST
RICHARD P. WHITE
JOHN R. WILLIAMSON
ANDREW L. WIT
HARVEY WOLINSKY
RADOVAN ZAK
BENJAMIN W. ZWEIFACH

ROBERT M. BERNE, JULIUS H. COMROE, JR., MATTHEW N. LEVY, *Consulting Editors*
SIVIA BRODSKY, *Managing Editor*

PUBLICATIONS COMMITTEE, AMERICAN HEART ASSOCIATION

DONALD HARRISON, *Chairman*
Stanford, Calif.

C. Richard Conti
Gainesville, FL

Harriet P. Dustan
Birmingham, AL

John W. Evers
Chicago, IL

Joan B. Fitzmaurice
Cambridge, MA

Edgar Haber
Boston, MA

Thomas F. Hannon
Chicago, IL

Brian F. Hoffman
New York, NY

J. O'Neal Humphries
Baltimore, MD

Fletcher McDowell
White Plains, NY

Albert J. Miller
Chicago, IL.

Robert A. O'Rourke
San Antonio, TX

Elliot Rapaport, M.D.
San Francisco, CA

Oscar M. Reinmuth
Pittsburgh, PA

Abraham M. Rudolph
San Francisco, CA

Published monthly at the Publications Office, American Heart Association, 7320 Greenville Avenue, Dallas, Texas 75231. Second class postage paid at Dallas, Texas, and additional mailing offices.

Copyright © 1980 by the American Heart Association, Inc., 7320 Greenville Avenue, Dallas, Texas 75231

Circulation Research

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

VOLUME 46

January–June 1980

No. 1 (January)

Brief Reviews: Receptors under Pressure: An Update on Baroreceptors. *Arthur M. Brown* . . . 1

Functional and Morphological Organization of the Rabbit Sinus Node. *Wim K. Bleeker, Albert J.C. Mackaay, Mireille Masson-Pévet, Lennart N. Bouman, and Anton E. Becker* . . . 11

Asymmetry of Consequences of Drug Disposition Mechanisms in the Wall of the Rabbit Aorta. *Rodolfo Pascual and John A. Bevan* . . . 22

Transmural Ventricular Distribution of Coronary Blood Flow during Coronary β_2-Adrenergic Receptor Activation in Dogs. *Raul J. Domenech and Peter MacLellan* . . . 29

Functional, Morphological, and Metabolic Abnormalities of the Cerebral Microcirculation after Concussive Brain Injury in Cats. *Enoch P. Wei, W. Dalton Dietrich, John T. Povlishock, Rudolph M. Navari, and Hermes A. Kontos* . . . 37

Neural Effects on Sinus Rate and Atrioventricular Conduction Produced by Electrical Stimulation from a Transvenous Electrode Catheter in the Canine Right Pulmonary Artery. *Terry B. Cooper, Gilbert R. Hageman, Thomas N. James, and Albert L. Waldo* . . . 48

Evidence and Quantification of the Vasopressin Arterial Pressure Control System in the Dog. *Allen W. Cowley, Jr., Sara J. Switzer, and Meredith M. Guinn* . . . 58

Effects of Preload on the Transmural Distribution of Perfusion and Pressure-Flow Relationships in the Canine Coronary Vascular Bed. *Avery K. Ellis and Francis J. Klocke* . . . 68

Responses of the Heart to Stimulation of Aortic Body Chemoreceptors in Dogs. *F. Karim, R. Hainsworth, O. A. Sofola, and L. M. Wood* . . . 77

In Vivo Assessment in Sheep of Thromboresistant Materials by Determination of Platelet Survival. *Jack N. Lindon, Richard E. C. Collins, Nicholas P. Coe, Albert Jagoda, Destiny Brier-Russell, Edward W. Merrill, and Edwin W. Salzman* . . . 84

Effects of Rapid Stimulation on the Transmembrane Action Potentials of Rabbit Sinus Node Pacemaker Cells. *Itsuo Kodama, Junki Goto, Shigeyuki Ando, Junji Toyama, and Kazuo Yamada* . . . 90

Effects of Sympathetic and Vagal Nerves on Recovery Properties of the Endocardium and Epicardium of the Canine Left Ventricle. *James B. Martins and Douglas P. Zipes* . . . 100

Alveolar Hypoxia Increases Lung Fluid Filtration in Unanesthetized Newborn Lambs. *Michael A. Bressack and Richard D. Bland* . . . 111

Effects of Tetrodotoxin, Lidocaine, Verapamil, and AHR-2666 on Ouabain-Induced Delayed Afterdepolarizations in Canine Purkinje Fibers. *Michael R. Rosen and Peter Danilo, Jr.* . . . 117

Continuous Positive-Pressure Ventilation Decreases Right and Left Ventricular End-Diastolic Volumes in the Dog. *James E. Fewell, Dana R. Abendschein, C. Jeffrey Carlson, John F. Murray, and Elliot Rapaport* . . . 125

Effect of Dobutamine on Systemic Capacity in the Dog. *Richard M. Fuchs, David L. Rutlen, and Wm. John Powell, Jr.* . . . 133

Oxygen Consumption in Subepicardial and Subendocardial Regions of the Canine Left Ventricle: The Effect of Experimental Acute Valvular Aortic Stenosis. *J. Vinten-Johansen and Harvey R. Weiss* . . . 139

A Comparison of Angiotensin II and Angiotensin III as Vasoconstrictors in the Mesenteric Circulation of Dogs. *Steven L. Britton, Jane M. Sexton, Mary J. Fiksen-Olsen, Peter G. Werness, and J. Carlos Romero* . . . 146

Instructions to Authors . . . 152

News from the American Heart Association . . . 155

No. 2 (February)

Special Article: Effect of Afterload Reduction on Myocardial Energetics. *Lincoln E. Ford* . . . 161

Electrophysiological Effects of Imipramine on Ovine Cardiac Purkinje and Ventricular Muscle Fibers. *Francis M. Weld and J. Thomas Bigger, Jr.* . . . 167

Pulmonary Leukostasis and Its Relationship to Pulmonary Dysfunction in Sheep and Rabbits. *Saunders W. Fountain, Bridget A. Martin, C. Elizabeth Musclow, and Joel D. Cooper* . . . 175

Effects of Splanchnic Nerve Stimulation on Cardiac Preload, Afterload, and Output in Cats. *Clive V. Greenway and I. Rome Innes* . . . 181

Reduction of Exercise-Induced Regional Myocardial Dysfunction by Propranolol: Studies in a Canine Model of Chronic Coronary Artery Stenosis. *Toshiaki Kumada, Kim P. Gallagher, Kunio Shirato, Daniel McKown, Mark Miller, W. Scott Kemper, Frank White, and John Ross, Jr.* . . . 190

Changes in Electrical Activity and Ultrastructure of Sinoatrial Nodal Cells of the Rabbit's Heart Exposed to Hypoxic Solution. *Katsuhide Nishi, Yushi Yoshikawa, Kazuhiro Sugahara, and Toru Morioka* . . . 201

Effects of Exercise- and Pacing-Induced Tachycardia on Coronary Collateral Flow in the Awake Dog. *John M. Fedor, Judith C. Rembert, Donald M. McIntosh, and Joseph C. Greenfield, Jr.* . . . 214

Effect of Acute Hypoxia on the Pulmonary Conversion of Angiotensin I to Angiotensin II in Dogs. *Peter Szidon, Noel Bairey, and Suzanne Oparil* ... 221
Effects of Calcium on Canine Purkinje Fiber Action Potential Duration in the Presence of Agents Affecting Potassium Permeability. *Michael S. Siegal and Brian F. Hoffman* ... 227
Alterations in Carotid Sinus Reflex Control of Arterial Hemodynamics Associated with Experimental Hyperlipemia in the Racing Greyhound. *Robert H. Cox, Rober J. Bagshaw, and David K. Detweiler* ... 237
Quantitative Studies on Plasmalemmal Folds and Caveolae of Rabbit Ventricular Myocardial Cells. *Katherine Roscoe Levin and Ernest Page* ... 244
Determinants of Instantaneous Pressure in Canine Left Ventricle: Time and Volume Specification. *Hiroyuki Suga, Kiichi Sagawa, and Linda Demer* ... 256
The Interrelationship among Histamine, Various Vasoactive Substances, and Macromolecular Permeability in the Canine Forelimb. *George J. Grega, James J. Maciejko, Richard M. Raymond, and Daniel P. Sak* ... 264
Role of Peripheral Vasodilation in the Hypotensive Response to Left Ventriculography in Anesthetized Dogs. *David D. Shaw, Gerald L. Wolf, and Harold A. Baltaxe* ... 276
A Comparison of Volume Conductor and Source Geometry Effects on Body Surface and Epicardial Potentials. *Yoram Rudy and Robert Plonsey* ... 283
Mechanical Properties of Myocardium from Hypertrophied Rat Hearts: A Comparison between Hypertrophy Induced by Senescence and by Aortic Banding. *Frank C. P. Yin, Harold A. Spurgeon, Myron L. Weisfeldt, and Edward G. Lakatta* ... 292
Letters to the Editor ... 301
News from the American Heart Association ... 305

No. 3 (March)

Brief Reviews: Atherosclerosis: Regression in Nonhuman Primates. *M. R. Malinow* ... 311
The Law of Laplace: Its Limitations as a Relation for Diastolic Pressure, Volume, or Wall Stress of the Left Ventricle. *Thomas F. Moriarity* ... 321
Ryanodine Alteration of the Contractile State of Rat Ventricular Myocardium: Comparison with Dog, Cat, and Rabbit Ventricular Tissues. *John Sutko and James T. Willerson* ... 332
Evidence for Lack of Innervation of β-2 Adrenoceptors in the Blood Vessels of the Gracilis Muscle of the Dog. *Michael P. Russell and Neil C. Moran* ... 344
Dual Mechanism for Inhibition of Calcium-Dependent Action Potentials by Acetylcholine in Avian Ventricular Muscle: Relationship to Cyclic AMP. *Rebecca L. Biegon and Achilles J. Pappano* ... 353
Pulsatile Flow and Pressure in Human Systemic Arteries: Studies in Man and in a Multibranched Model of the Human Systemic Arterial Tree. *Michael F. O'Rourke and Albert P. Avolio* ... 363
Membrane Electrical Effects of Histamine on Vascular Smooth Muscle of Canine Coronary Artery. *David R. Harder* ... 372
The Role of Vagal Afferents in the Reflex Control of the Left Ventricular Refractory Period in the Cat. *Robert W. Blair, Takeshi Shimizu, and Vernon S. Bishop* ... 378
Ultrastructural Injury to Chick Myocardial Cells in Vitro Following "Electric Countershock." *Janice L. Jones, Charmian C. Proskauer, Willis K. Paull, Eugene Lepeschkin, and Ronald E. Jones* ... 387
Renal Receptors in the Rat Sensitive to Chemical Alterations of Their Environment. *Giorgio M. Recordati, Nicholas G. Moss, Simonetta Genovesi, and Paula R. Rogenes* ... 395
The Effect of Ouabain on the Isolated Sinus Node Preparation of the Rabbit Studied with Microelectrodes. *Gerhard Steinbeck, Felix I.M. Bonke, Maurits A. Allessie, and Wim J.E.P. Lammers* ... 406
Representation of Cardiac Electrical Activity by a Moving Dipole for Normal and Ectopic Beats in the Intact Dog. *Pierre Savard, Fernand A. Roberge, Jean-Benoît Perry, and Réginald A. Nadeau* ... 415
The Mechanism of α-Adrenergic Activation of the Dog Coronary Artery. *Cornelis van Breemen and Bette Siegel* ... 426
Effect of Pacing-Induced Ischemia on Left Ventricular Diastolic Pressure-Volume Relations in Dogs with Coronary Stenoses. *Takashi Serizawa, Blase A. Carabello, and William Grossman* ... 430
Enhanced Recovery from Postischemic Acute Renal Failure: Micropuncture Studies in the Rat. *William F. Finn* 440
Effect of Adenosine on the Distribution of Renal Blood Flow in Dogs. *William S. Spielman, Steven L. Britton, and Mary J. Fiksen-Olsen* ... 449
News from the American Heart Association ... 457

No. 4 (April)

The Role of the Sodium Pump in the Control of Vascular Tone in the Rat. *Stanley Lang and Mordecai P. Blaustein* ... 463
The Relationship between Ultrasonic Pulsatility Index and Proximal Arterial Stenosis in a Canine Model. *D.H. Evans, W.W. Barrie, M.J. Asher, S. Bentley, and P.R.F. Bell* ... 470
Stimulation by Bradykinin of Afferent Vagal C-Fibers with Chemosensitive Endings in the Heart and Aorta of the Dog. *Marc P. Kaufman, David G. Baker, Hazel M. Coleridge, and John C.G. Coleridge* ... 476
Distribution of Lysosomal Cathepsin D in Normal, Ischemic, and Starved Rabbit Cardiac Myocytes. *Robert S. Decker, A. Robin Poole, and Kern Wildenthal* ... 485

Morphometric Study of Early Postnatal Development in the Left and Right Ventricular Myocardium of the Rat: I. Hypertrophy, Hyperplasia, and Binucleation of Myocytes. *Piero Anversa, Giorgio Olivetti, and Alden V. Loud* . . . 495

Morphometric Study of Early Postnatal Development in the Left and Right Ventricular Myocardium of the Rat: II. Tissue Composition, Capillary Growth, and Sarcoplasmic Alterations. *Giorgio Olivetti, Piero Anversa, and Alden V. Loud* . . . 503

Electrophoretic Profiles of Nonhistone Nuclear Proteins of Human Hearts with Muscular Subaortic Stenosis. *Choong-Chin Liew, Michael J. Sole, Malcolm D. Silver, and E. Douglas Wigle* . . . 513

Characterization of Cell Populations Isolated from Aortas of Rhesus Monkeys with Experimental Atherosclerosis. *Stanley Fowler, Paul A. Berberian, Helen Shio, Sidney Goldfischer, and Harvey Wolinsky* . . . 520

Time Course of Changes in the Mechanical Properties of the Canine Right and Left Ventricles during Hypertrophy Caused by Pressure Overload. *Israel Mirsky and Michael M. Laks* . . . 530

Effects of External Calcium, Calcium Channel-Blocking Agents, and Stimulation Frequency on Cycle Length-Dependent Changes in Canine Cardiac Action Potential Duration. *Thomas J. Colatsky and Perry M. Hogan* 543

Sodium Requirement for Effects of Ouabain on Contraction of Isolated Guinea Pig Atria. *Joel Linden and Gary Brooker* . . . 553

Left and Right Ventricular Pump Function and Consequences of Having Two Pumps in One Heart: A Study on the Isolated Cat Heart. *Gijs Elzinga, Hroar Piene, and Jaap P. de Jong* . . . 564

Prevention by Vagotomy or Atropine Administration of the Hemodynamic Changes Occurring after Acute Unilateral Nephrectomy in the Dog. *Michael H. Humphreys, J. Carlos Ayus, and Charles J. Stanton, Jr.* . . . 575

Suppression of Myocardial Protein Degradation in the Rat during Fasting: Effects of Insulin, Glucose, and Leucine. *Gregory D. Curfman, Donald S. O'Hara, Barry E. Hopkins, and Thomas W. Smith* . . . 581

Letters to the Editor . . . 590

Erratum . . . 592

News from the American Heart Association . . . 593

No. 5 (May)

The Relationship between the Repetitive Extrasystole Threshold and the Ventricular Fibrillation Threshold in the Dog: Non-parallel Changes following Pharmacological Intervention. *Patrice Jaillon, Ingela Schnittger, Jerry C. Griffin, and Roger A. Winkle* . . . 599

Cardiac Responses during Stimulation of the Dorsal Motor Nucleus and Nucleus Ambiguus in the Cat. *G. Steven Geis and Robert D. Wurster* . . . 606

The Effect of Antiarrhythmic Drugs on Depressed Conduction and Unidirectional Block in Sheep Purkinje Fibers. *Robert B. Wald, Menashe B. Waxman, and Eugene Downar* . . . 612

Changes in Renal Vascular Reactivity at Various Stages of Deoxycorticosterone Hypertension in Rats. *Kathleen H. Berecek, Martha Stocker, and Franz Gross* . . . 619

Inhibition of Rat Arterial Smooth Muscle Cell Proliferation by Heparin: In Vivo Studies with Anticoagulant and Nonanticoagulant Heparin. *John R. Guyton, Robert D. Rosenberg, Alexander W. Clowes, and Morris J. Karnovsky* . . . 625

Comparison of the Effects of Regional Ishcemia, Hypoxia, Hyperkalemia, and Acidosis on Intracellular and Extracellular Potentials and Metabolism in the Isolated Porcine Heart. *Hervé Moréna, Michiel J. Janse, Jan W.T. Fiolet, Willem J.G. Krieger, Harry Crijns, and D. Durrer* . . . 634

Effect of Exogenous Angiotensin II on Renal Hemodynamics in the Awake Rat. *Chen H. Hsu, Theodore W. Kurtz, and James M. Slavicek* . . . 646

Metabolism of Complex Carbohydrates by Fibroblasts from Rheumatic and Normal Human Subjects. *M. Mansoor Baig and Elia M. Ayoub* . . . 651

Electrophysiological Effects of Disopyramide and Quinidine on Guinea Pig Atria and Canine Cardiac Purkinje Fibers. Dependence on Underlying Cholinergic Tone. *Michael J. Mirro, August M. Watanabe, and John C. Bailey* . . . 660

Interrelationships of Flow, Intravascular Pressure, and Tissue Perfusion in the Measurement of Capillary Permeability to Sodium in Isolated Dog Lung Lobes. *Robert G. Tancredi and Tada Yipintsoi* . . . 669

Membrane and Contractile Properties of Rat Vascular Tissue in Copper-Deficient Conditions. *Seigo Kitano* . . . 681

Ontogenesis of Cholinergic Innervation in the Rat Heart. *William J. Marvin, Jr., Kent Hermsmeyer, Ruth I. McDonald, Laura M. Roskoski, and Robert Roskoski, Jr.* . . . 690

Effects of Sympathetic Nerves on Cerebral Vessels during Acute, Moderate Increases in Arterial Pressure in Dogs and Cats. *David W. Busija, Donald D. Heistad, and Melvin L. Marcus* . . . 696

Tension Development and Sarcomere Length in Rat Cardiac Trabeculae. Evidence of Length-Dependent Activation. *Henk E.D.J. ter Keurs, Wim H. Rijnsburger, Rob van Heuningen, and Michiel J. Nagelsmit* . . . 714

Prostaglandins and Potassium Relaxation in Vascular Smooth Muscle of the Rat. The Role of Na-K ATPase. *Warren E. Lockette, R. Clinton Webb, and David F. Bohr* . . . 703

Synthesis and Pharmacology of a Noncompetitive Antagonist of Angiotensin-Induced Contractions of Vascular Smooth Muscle: [Sarcosyl]^1-[Cysteinyl (*S*-Methyl)]^8-Angiotensin II. *Richard J. Freer, James C. Sutherland, Jr., and Alan R. Day* . . . 714

Characterization of High and Low Pressure Baroreceptor Influences on Renal Nerve Activity in the Primate *Macaca fascicularis*. *Stephen F. Echtenkamp, Irving H. Zucker, and Joseph P. Gilmore* . . . 726

Letters to the Editor ... 731
News from the American Heart Association ... 734

No. 6 (June)

The Acute Effect of Lithium on Renal Renin and Prostaglandin E Synthesis in the Dog. *Joseph V. Nally, Gregory W. Rutecki, and Thomas F. Ferris* ... 739
Effects of "Paradoxical" Systolic Fiber Stretch on Ischemic Myocardial Contracture, Compliance, and Contractility in the Rabbit. *Carl S. Apstein and J. David Ogilby* ... 745
The Relative Time Course of Early Changes in Mitochondrial Function and Intracellular pH during Hypoxia in the Isolated Toad Ventricle Strip. *Joseph C. LaManna, Jean-Jacques Saive, and T. Russell Snow* ... 755
Role of Adenosine in Local Control of Intestinal Circulation in the Dog. *Harris J. Granger and Carrie P. Norris* 764
Basis of pH-Independent Inhibitory Effects of Lactate on ^{45}Ca Movements and Responses to KCl and $PGF_{2\alpha}$ in Canine Coronary Arteries. *R. Kelly Hester, George B. Weiss, and James T. Willerson* ... 771
Cardiovascular Reflexes Resulting from Capsaicin-Stimulated Gastric Receptors in Anesthetized Dogs. *John C. Longhurst, Juliet H. Ashton, and Gary A. Iwamoto* ... 780
Procainamide Delivery to Ischemic Canine Myocardium following Rapid Intravenous Administration. *Thomas L. Wenger, David J. Browning, Christopher E. Masterton, Mohamed B. Abou-Donia, Frank E. Harrell, Jr., Robert J. Bache, and Harold C. Strauss* ... 789
The Dynamics of the Lung Fluid Filtration System in Dogs with Edema. *Marlys H. Gee and James A. Spath, Jr.* 796
Identification of an Angiotensin Receptor in Rabbit Renomedullary Interstitial Cells in Tissue Culture: Correlation with Prostaglandin Biosynthesis. *C. Alan Brown, Randall M. Zusman, and Edgar Haber* ... 802
Anti-Alprenolol Antibodies in the Rabbit: A New Probe for the Study of β-Adrenergic Receptor Interaction. *Stanley G. Rockson, Charles J. Homcy, and Edgar Haber* ... 808
Different Electrophysiological Responses of Canine Endocardium and Epicardium to Combined Hyperkalemia, Hypoxia, and Acidosis. *Robert F. Gilmour, Jr., and Douglas P. Zipes* ... 814
Interaction between Na^+,K^+ Exchanges and the Direct Inhibitory Effect of Acetylcholine on Canine Femoral Arteries. *Jozef G. De Mey and Paul M. Vanhoutte* ... 826
In Vitro Neurogenic and Musculotropic Responses to Angiotensin Peptides in Normal and Sodium-Restricted Rabbits. *Edmund J. Sybertz and Michael J. Peach* ... 836
Chronic Lability of Arterial Pressure Produced by Destruction of A2 Catecholaminergic Neurons in Rat Brainstem. *William T. Talman, David Snyder, and Donald J. Reis* ... 842
Protective Effects of Thromboxane Synthetase Inhibitors in Rats in Endotoxic Shock. *W. Curtis Wise, James A. Cook, Perry V. Halushka, and Daniel R. Knapp* ... 854
Effects of Atrial Pacing on Atrio-Sinus Conduction and Overdrive Suppression in the Isolated Rabbit Sinus Node. *Gerhard Steinbeck, Ralph Haberl, and Berndt Lüderitz* ... 859
Hypoxic Contraction of Isolated Canine Coronary Artery: Mediation by Potassium-Dependent Exocytosis of Norepinephrine. *Leonor J. Borda, Rafael Shuchleib, and Philip D. Henry* ... 870
Lack of Nonexcretory Renal Influences on Hemodynamics and Fluid Volume Distribution after the Volume Loading of Conscious Dogs. *R. Davis Manning, Jr.* ... 880
Letters to the Editor ... 887
Books Received ... 889

News from the American Heart Association ... 890
Volume Author Index ... 895
Volume Subject Index ... 897
Supplement Author Index ... 904
Supplement Subject Index ... 905

Circulation Research

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

VOLUME 46

January–June

1980

AMERICAN HEART ASSOCIATION, INC.

Circulation Research

An Official Journal of the American Heart Association

Circulation Research provides a medium for bringing together basic research on the cardiovascular system from various disciplines including biology, biochemistry, biophysics, morphology, pathology, physiology, and pharmacology. The Journal also will accept for publication manuscripts on clinical research that contribute to an understanding of fundamental problems.

Editor
BRIAN F. HOFFMAN

Associate Editor
MICHAEL R. ROSEN

Editorial Office: Department of Pharmacology, College of Physicians and Surgeons, 630 West 168th Street, New York, New York 10032

EDITORIAL BOARD

NORMAN R. ALPERT
ROBERT J. BACHE
ROGER C. BARR
ARTHUR L. BASSETT
DEREK BERGEL
JOHN A. BEVAN
COLIN M. BLOOR
F. NORMAN BRIGGS
ARTHUR M. BROWN
EDWARD CARMELIET
ROBERT B. CASE
SHU CHIEN
PAUL F. CRANEFIELD
JAMES O. DAVIS
DAVID E. DONALD
JAMES M. DOWNEY
S. EVANS DOWNING
GEORGE I. DRUMMOND
DIRK DURRER
ALEXANDRE FABIATO
ERIC O. FEIGL
CARLOS M. FERRARIO
HARRY A. FOZZARD
JOHN W. FUNDER
W. RAY GIBBONS
JOSEPH P. GILMORE
JOSEPH C. GREENFIELD, JR.
FRANCIS J. HADDY
JOEL HARDMAN
LLOYD L. HEFNER
DONALD D. HEISTAD
MICHAEL HEYMANN
JULIEN I.E. HOFFMAN
NORMAN K. HOLLENBERG
ROBERT B. JENNINGS
BÖRJE JOHANSSON
PHILIP A. KHAIRALLAH
HERMES A. KONTOS
MATTHEW N. LEVY
THOMAS C. LLOYD, JR.
MELVIN L. MARCUS
JEAN M. MARSHALL
PAUL MARTIN
JOHN C. MCGIFF
ISRAEL MIRSKY
JAMES R. NEELY
RAY A. OLSSON
SOLBERT PERMUTT
BERTRAM PITT
MICHAEL J. PURVES
EUGENE M. RENKIN
KIICHI SAGAWA
ANTONIO SCARPA
JAMES SCHEUER
EVELINE E. SCHNEEBERGER
SIDNEY S. SCHREIBER
ARTIN A. SHOUKAS
LEONARD T. SKEGGS
BURTON E. SOBEL
ANDREW P. SOMLYO
MADISON S. SPACH
HAROLD C. STRAUSS
S. P. SUTERA
MERRILL TARR
AUBREY E. TAYLOR
ROBERT E. TEN EICK
MARIO VASSALLE
HSUEH-HWA WANG
AUGUST M. WATANABE
JOHN B. WEST
RICHARD P. WHITE
JOHN R. WILLIAMSON
ANDREW L. WIT
HARVEY WOLINSKY
RADOVAN ZAK
BENJAMIN W. ZWEIFACH

ROBERT M. BERNE, JULIUS H. COMROE, JR., MATTHEW N. LEVY, *Consulting Editors*
SIVIA BRODSKY, *Managing Editor*

PUBLICATIONS COMMITTEE, AMERICAN HEART ASSOCIATION

DONALD HARRISON, *Chairman*
Stanford, Calif.

C. Richard Conti
Gainesville, FL

Harriet P. Dustan
Birmingham, AL

John W. Evers
Chicago, IL

Joan B. Fitzmaurice
Cambridge, MA

Edgar Haber
Boston, MA

Thomas F. Hannon
Chicago, IL

Brian F. Hoffman
New York, NY

J. O'Neal Humphries
Baltimore, MD

Fletcher McDowell
White Plains, NY

Albert J. Miller
Chicago, IL.

Robert A. O'Rourke
San Antonio, TX

Elliot Rapaport, M.D.
San Francisco, CA

Oscar M. Reinmuth
Pittsburgh, PA

Abraham M. Rudolph
San Francisco, CA

Published monthly at the Publications Office, American Heart Association, 7320 Greenville Avenue, Dallas, Texas 75231. Second class postage paid at Dallas, Texas, and additional mailing offices.

Copyright © 1980 by the American Heart Association, Inc., 7320 Greenville Avenue, Dallas, Texas 75231

Supplement to Circulation Research

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

VOLUME 46

January–June 1980

SUPPLEMENT I: CARDIOVASCULAR RECEPTORS: MOLECULAR, PHARMACOLOGICAL, AND CLINICAL STUDIES

Introduction.
Paul I. Korner and James A. Angus I-1

Receptor Concepts: A Century of Evolution.
Pierre De Meyts and Guy G. Rousseau I-3

Some Clinical Implications of the Receptor Concept.
Paul Turner I-10

Characterization of α-Adrenoceptors in Rat and Guinea Pig Tissues using Radiolabeled Agonists and Antagonists.
Bevyn Jarrott, Roger J. Summers, Anne J. Culvenor, and William J. Louis I-15

Central Cardiovascular α-Adrenoceptors: Relation to Peripheral Receptors.
Walter Kobinger, Christian Lillie, and Ludwig Pichler I-21

Central Nervous β-Adrenoceptors and Their Role in the Cardiovascular Action of Propranolol in Rabbits.
Paul I. Korner, Patricia K. Dorward, Peter A. Blombery, and Gregory J. Frean I-26

α- and β-Adrenoceptor Activities of Norepinephrine Analogues in Isolated Tissues of the Rat.
Olaf Drummer, Anne J. Culvenor, Bevyn Jarrott, and William J. Louis I-33

Biochemical Studies of Cardiac β-Adrenoceptors, and Their Clinical Significance.
Stephen P. Baker and Lincoln T. Potter I-38

Cardiac β-Adrenoreceptors and Adenylyl Cyclase Activity in Rabbit Heart during Conditions of Altered Sympathetic Activity (Short Communication).
Alex Bobik, Paul Korner, Valerie Carson, and Judy R. Oliver I-43

Cardiovascular Adrenergic Receptors in Experimental Hypertension in the Rat (Short Communication).
Elizabeth A. Woodcock and Colin I. Johnston I-45

Norepinephrine Kinetics in Patients with Idiopathic Autonomic Insufficiency (Short Communication).
Murray Esler, Graham Jackman, Dianne Kelleher, Helen Skews, Garry Jennings, Alex Bobik, and Paul Korner I-47

Relationship between Maximum Chronotropic Response to Isoproterenol in Man and Generation of Cyclic Adenosine Monophosphate by Lymphocytes (Short Communication).
Garry L. Jennings, Alex Bobik, Murray D. Esler, and Paul I. Korner I-49

Cardioselective β-Adrenoceptor Blocking Actions of Some 2-Methoxyphenylethanolamines in Guinea Pig Tissues (Short Communication).
L. Gordon Letts, Diana M. Temple, and Lyall R. Williams I-51

Phenoxypropranolamines as Selective β_1-Receptor Agonists (Short Communication).
Colin Raper, Grant A. McPherson, and Errol Malta I-53

Pharmacological Evidence for Differences in the β-Adrenoceptor Populations Influencing Atrial Rate in Guinea Pig and Cat (Short Communication).
Stella R. O'Donnell and Janet C. Wanstall I-55

Differences in the Time-Course of Responses to α- and β-Adrenoceptor and of Responses to H_1- and H_2-Histamine Receptor Stimulation (Short Communication).
W. E. Glover I-57

Peripheral Dopamine Receptors.
Barbara J. Clark and Klaus Menninger I-59

Pharmacological Assay of Cardiac H_2-Receptor Blockade by Amitriptyline and Lysergic Acid Diethylamide.
James A. Angus and James W. Black I-64

Prejunctional Receptors Modulating Autonomic Neuroeffector Transmission.
Michael J. Rand, Harry Majewski, Iain C. Medgett, Marian W. McCulloch, and David F. Story I-70

Evidence for a Modulatory Role of Dopamine in Sympathetic Transmission (Short Communication).
Wendy Hope, Henryk Majewski, Marian W. McCulloch, Michael J. Rand, and David F. Story I-77

Prejunctional Receptors in Human Digital Arteries (Short Communication).
Robert F. W. Moulds, Reiner Rittinghausen, and John Shaw I-80

Heterogeneity of Glucocorticoid Receptors.
John W. Funder and John W. Barlow I-83

Steroid Receptors and Hypertension.
John P. Coghlan, Aldona Butkus, Derek A. Denton, William F. Graham, Timothy J. Humphrey, Bruce A. Scoggins, and Judith A. Whitworth I-88

Radioreceptor Assay of Plasma Mineralocorticoid Activity: Role of Aldosterone, Cortisol, and Deoxycorticosterone in Various Mineralocorticoid-Excess States.
N. C. Lan, D. T. Matulich, J. R. Stockigt, E. G. Biglieri, M. I. New, J. S. D. Winter, J. K. Mckenzie, and J. D. Baxter I-94

Toward More Specific Aldosterone Antagonists: A Radioreceptor Assay Approach (Short Communication).
John W. Funder, Julie E. Mercer, Stanley Ulick, Diana Marver, and William R. Adam I-101

Intimal Lesions in Rat Caudal Artery: Ablation, Replacement, and Receptor Studies on the Protective Effects of Estrogen (Short Communication).
Mary Osborne-Pellegrin, Michèle Coutard, Dominique Weil, Paul Pearce, and John W. Funder I-103

Lipoprotein Protein Receptors and Their Relation to Atherosclerosis.
Paul J. Nestel I-106

Receptors for Insulin and Insulin-like Molecules.
Paul F. Williams, Robert C. Baxter, and John R. Turtle I-110

Insulin Receptor Autoantibodies: Clinical and Molecular Aspects (Short Communication).
Len C. Harrison I-116

Angiotensin II Receptors: Properties and Regulations in Adrenal Glomerulosa Cells.
G. Aguilera, A. Schirar, A. Baukal, and K. J. Catt I-118

Hormonal Responses to Angiotensin Blockade: Comparison between Receptor Antagonism and Converting Enzyme Inhibition.
Colin I. Johnston, John A. Millar, David J. Casley, Barry P. McGrath, and P. Geoffrey Matthews I-128

Peripheral Production of Angiotensin II and III in Sheep (Short Communication).
David T. W. Fei, John P. Coghlan, Ross T. Fernley, Bruce A. Scoggins, and Geoffrey W. Tregear I-135

Opiate Receptors and Their Clinical Implications.
Sydney Spector I-138

Enkephalin, Endorphin, and the Opiate Receptor.
Geoffrey W. Tregear and John P. Coghlan I-142

Enkephalins as Transmitters in the Central Nervous System.
A. W. Duggan I-149

Studies on the Digitalis Receptor.
Arnold Schwartz and Robert J. Adams I-154

Cardiovascular Receptors and Calcium.
Winifred G. Nayler, Jaimi-Mas-Oliva, and Alan J. Williams I-161

The Digitalis Receptor: Inferences from Structure-Activity Relationship Studies.
Richard Thomas, Lindsay Brown, John Boutagy, and Alex Gelbart I-167

Effects of Hypokalemia on the Cardiotropic Actions of Digoxin in Dogs: Correlation with Inhibition of Cardiac Na^+,K^+-Adenosine Triphosphatase (Short Communication).
Alex Gelbart, Roger J. Hall, and Robert Goldman I-173

Purinergic Receptors in the Heart.
Geoffrey Burnstock I-175

Some Cardiovascular Properties of Prostacyclin (PGI_2) Which Are Not Shared by PGE_2.
Gregory J. Dusting and John R. Vane I-183

VOLUME AUTHOR INDEX

Abel, P.W., 770
Abelmann, W.H., 728
Abendschein, D.R., 467
Alam, S.S., 374
Alexander, R.W., 278, 493
Anderson, R.W., 902
Andresen, M.C., 821, 829
Angell-James, J.E., 890
Anversa, P., 417
Aprigliano, O., 770
Araki, H., 757
Aronson, R.S., 443
Asmussen, I., 620

Bache, R.J., 59
Baer, R.W., 88
Bailey, J.C., 473, 855
Barry, W.H., 493
Bashour, F.A., 599
Baskin, S.I., 763
Bauwens, D., 49
Bélanger, P., 312
Belardinelli, L., 684
Bellamy, R.F., 88
Belloni, F.L., 684
Bennett, T.D., 551
Berecek, K.H., 675
Berkoff, H.A., 721
Berne, R.M., 568, 684, 807
Beydler, S., 131
Bhattacharyya, M., 666
Bilezikian, J.P., 41
Blick, E.F., 258
Boatwright, R.B., 599
Bogen, D.K., 728
Bond, M.G., 425
Bosher, L.P., 792
Brem, S., 433
Brown, A.M., 821, 829
Browning, D.J., 742
Brunner, M.C., 249
Brutsaert, D.L., 20, 637
Butcher, R.G., 338

Capasso, J.M., 922
Cardinal, R., 151
Carlson, C.J., 467
Carmeliet, E., 501
Case, R.B., 10
Castellana, F.S., 10
Chamberlain, J.H., 934
Chen, H.I., 366
Chen, M-J., 312
Chuck, L.H.S., 592
Claes, V.A., 20
Cobb, F.R., 701
Connor, W.E., 374
Cornish, K.G., 226, 509
Cousineau, D., 329
Crystal, G.J., 599

D'Alecy, L.G., 293
d'Alnoncourt, C.N., 151
Danilo, P., Jr., 267
Davis, J.O., 99
Davis, T.P., 99
DeForrest, J.M., 99
DiBona, D.R., 653
Diepstra, G., 530
DiMicco, J.A., 80
Downey, H.F., 599
Drake, A.J., 338, 408
Durrer, D., 151, 454

Eckberg, D.L., 208
Ehrlich, W., 88
Elzinga, G., 559

Falgout, H.J., 866
Farrar, D.J., 425
Fein, F.S., 922
Felder, R.B., 628
Ferrier, G.R., 238
Feuerstein, G., 835
Feuerstein, N., 835
Fewell, J.E., 467
Fleiss, J.L., 1
Fozzard, H.A., 692
Frank, J.S., 131
Franklin, D., 173
Fray, J.C.S., 485
Freeman, R.H., 99
Fuhro, R.L., 182

Gavras, H., 356
George, M.J., 890
Gibbs, C.L., 408
Gil, J., 384
Gillis, R.A., 80
Gilmore, J.P., 226
Gimbrone, M.A., Jr., 278
Goethals, M.A., 637
Goldberg, I.D., 182
Gonyea, W., 530
Gordon, A.M., 610
Goresky, C.A., 312, 329
Grant, A.O., 542
Grayson, J., 934
Green, H.D., 425
Grega, G.J., 584
Grimbert, F.A., 866
Gross, F., 675
Gunther, S., 278
Gutman, Y., 835

Haering, W., 578
Hamilton, B.L., 80
Hammon, J.W., Jr., 902
Hariman, R.J., 775
Haworth, R.A., 721
Hedley-Whyte, J., 883
Heimann, J.C., 883
Heineman, F., 934
Heistad, D.D., 293
Hermsmeyer, K., 524, 770
Hess, D.S., 59
Hirakawa, A., 173
Ho, S.T., 366
Hoffman, B.F., 775
Hoover, R.L., 578
Hopkins, R.A., 902
Hordof, A.J., 267
Housmans, P.R., 637
Hussain, M.N., 166

Ilebekk, A., 27
Ismay, M.J., 286

Jackson, M.D., 721
Jandhyala, B.S., 584
Janse, M.J., 151
Johns, B.L., 551
Joyner, W.L., 226

Karnovsky, M.J., 578
Karp, P.J., 117
Katila, T.E., 117
Katz, D., 433
Katz, T.C., 763
Kawai, C., 173
Kemper, W.S., 173
Kendrick, Z.V., 763
Kerr, C.R., 742
Kirk, E.S., 108
Kléber, A.G., 151
Komai, H., 721
Kornstein, L.B., 922
Korth, M., 692
Krausz, M.M., 835
Kreman, M., 131
Kuo, L., 366
Kuraoka, S., 821

Lab, M., 559
Lameire, N., 839
Lathrop, D.A., 692
Lau, Y.H., 41
Layman, D.L., 374
Lee, W.B., 286
Lefer, A.M., 757
Lekven, J., 27
Leusen, I., 839
Liang, C-s., 356
Liao, J.F., 366
Liard, J.-F., 346
Limas, C.J., 536
Lindenmayer, G.E., 710
Lixfeld, W., 166
Lorenz, R.R., 845
Loud, A.V., 417
Lumbers, E.R., 286
Lyon, C.K., 68

Malliani, A., 627
Malm, J.R., 267
Manalan, A.S., 855
Marciniak, D.L., 584
Marcus, M.L., 293
Markle, R., 433
Marsh, J.D., 493
Martins, J.B., 33
Mary-Rabine, L., 267
Marzilli, M., 258
McHale, P.A., 902
McMahon, T.A., 728
Melissari, M., 417
Miller, J.W., 49
Miller, M.M., 27
Mills, J., 433
Mimbs, J.W., 49
Mirro, M.J., 473, 855
Mitchell, J.H., 530
Möhring, J., 346
Montani, J.P., 346
Morsink, H., 151
Murdock, R.H., Jr., 701
Murray, J.F., 467

Murray, P.A., 190
Murray, R.D., 675
Myers, S., 231

Naylor, R.E., 775
Needleman, A., 728
Needleman, P., 231
Neer, E.J., 493
Nixon, D.G., 875
Noble, M.I.M., 338, 408, 559
Nolan, S.P., 792

O'Donnell, M., 49
Olivetti, G., 417
Olsson, R.A., 875
Orr, P.L., 763
Osakada, G., 173

Panerai, R.B., 934
Papadoyannis, D.E., 338, 408, 559
Paradise, N.F., 516
Parker, J.C., 866
Parmley, W.M., 592
Patterson, R.E., 108
Paulus, W.J., 20
Penpargkul, S., 911
Pidgeon, J., 559
Piepgrass, W.C., 792
Pollack, G.H., 610
Powell, W.J., Jr., 653
Powis, D.A., 845
Priebe, H-J., 883
Priola, D.V., 74
Prystowsky, E.N., 742

Rabinowitz, S.A., 728
Randazzo, R., 88
Ransil, B.J., 182
Rapaport, E., 467
Rau, E.E., 131
Raymond, R.M., 584
Riddle, M.C., 374
Ringoir, S., 839
Ritman, E.L., 516
Robinson, R.B., 41
Rogers, S.D., 226
Rooke, T., 217
Rose, C.P., 312, 329
Rosen, M.R., 41, 267
Rosenberg, R., 578
Rosenthal, J.E., 238
Ross, J., Jr., 173
Rothe, C.F., 551
Rowe, B.P., 99
Rubio, R., 568, 684

Saarinen, M., 117
Sabbah, H.N., 258
Saito, D., 875
Sasayama, S., 173
Sayers, B. McA., 934
Schaible, T., 911
Scheuer, J., 911
Schoun, J., 346
Scott, J.B., 68
Seed, A., 559
Seymour, A.A., 99
Shepherd, J.T., 845
Sherman, I., 934
Sheu, S.-S., 692
Silage, D.A., 384
Siltanen, P., 117
Smith, P.K., 902
Smith, T.W., 493
Snapinn, S.M., 10
Sobel, B.E., 49
Sole, M.J., 166
Solen, K.A., 374
Sonnenblick, E.H., 922
Sordahl, L.A., 814
Soukas, A.A., 249
Souza, J.D., 80
Sparks, H.V., 217
Stein, P.D., 258
Stemerman, M.B., 182
Stewart, M.L., 814
St. John Sutton, M.G., 516
Stokland, O., 27
Stowe, D.F., 392
Strauss, H.C., 542, 742
Strauss, L.J., 542
Strobeck, J.E., 922
Stubbs, J., 338

Tam, S.Y., 10
Taylor, A.E., 866
Thames, M.D., 628
Thubrikar, M., 792
Trapani, A., 770

van Capelle, F.J.L., 151, 454
Vanholder, R., 839
Vanhoutte, P.M., 845
Varpula, T.T., 117
Vassalle, M., 666
Vatner, S.F., 190, 201
Vereecke, J., 501
Vleugels, A., 501
Vomacka, R.B., 875

Wagner, W.D., 425
Wallace, A.G., 542
Wallenstein, S., 1
Wang, C.Y., 68
Wassertheil-Smoller, S., 433
Watanabe, A.M., 855
Weiss, H.R., 400
Wellsmith, N.V., 710
Welsh, J.E., 568
Williams, E.S., 473
Williams, G.M., 99
Williams, T.P., 80
Williford, D.J., 80
Wilms-Schopman, F., 151
Winn, H.R., 563
Wolinsky, H., 301, 433

Yipintsoi, T., 911

Zaydon, P.T., 763
Zipes, D.P., 33
Zipser, R., 231
Zucker, C.L., 1
Zucker, I.H., 509

Circulation Research

VOLUME 47 JULY–DECEMBER 1980

VOLUME SUBJECT INDEX

A

Acetaldehyde
electrophysiological effects on cardiac tissues (dog, guinea pig), 473
Acetate
electrophysiological effects on cardiac tissues (dog, guinea pig), 473
Acetylstrophanthidin
effects on sympathetic adrenergic neuroeffector junction in vascular smooth muscle (dog), 845
Adenosine
levels in brain during bicuculline-induced seizures (rat), 568
relationship between cardiac oxygen usage, adenosine levels, and coronary resistance (dog), 875
role in atrioventricular conduction disturbances during hypoxia (guinea pig, rabbit), 684
role in regulation of coronary blood flow, 807
vasodilator responses to moderate hypoxia after injection (guinea pig), 392
β-Adrenergic receptors
subclassification in cultured cardiac myoblasts and fibroblasts (rat), 41
β-Adrenergic stimulation
adrenal catecholamine section induced by, role of the renin-angiotensin system (cat), 835
Albumin-excluded volume
effect of increased vascular pressure, in lung (dog), 866
γ-Aminobutyric acid
influence on arterial pressure and heart rate (cat), 80
Angiotensin II
and increased electrical coupling in mammalian ventricular myocardium, 524
binding sites in mesenteric artery (rat), 278
effect on heart rate (sheep), 286
Animals (cat)
γ-aminobutyric acid and control of cardiovascular function, 80
autonomic blockade during static exercise, 530
caffeine reversal of length-dependent contractile state, 592
end-systolic pressure-volume relation estimated from physiologically loaded papillary muscle contractions, 20
graded hypoxia and myocardial relaxation, 516
interval-strength relation of intact heart, 559
ionic currents during hypoxia in voltage-clamped ventricular muscle, 501
prostacyclin in the perfused heart, 757
renin-angiotensin and catecholamine secretion, 835
Animals (chick)
desensitization of embryonic ventricles to effects of isoproterenol, 493
Animals (cow)
taurine kinetics in Purkinje fibers, 763
Animals (dog)
analysis of left ventricular wall thickness and shear by ultrasonic triangulation technique, 173
analytical model of myocardial infarction in the left ventricle, 728
arterial CO_2, myocardial O_2 consumption, and coronary blood flow, 217
automaticity and entrance block induced by focal depolarization of ventricular tissues, 238
autonomic nerve control of ventricular refractoriness, 33
basal myocardial O_2 consumption, 408
cardenolides and adrenergic neuroeffector junction, 845
conscious, acute renovascular hypertension in, 356
contribution of coronary arteries to perfusion of normal and hypertrophied right ventricles, 190
correlation between acute reductions in myocardial blood flow and function, 201
correlation between cell swelling and necrosis in myocardial ischemia, 653
criteria used to identify ischemic myocardium, 108
diastolic intramyocardial pressure, 258
effects of histamine on transvascular protein efflux after adrenergic receptor blockade, 584
effects of increased vascular pressure on albumin-excluded volume in the lung, 866
effects of infarction on regional blood flow to ischemic regions, 701
elastic modulus of aortic valve leaflets in vivo and in vitro, 792
electrical activity from the sinus node region, 775
electrophysiological effects of ethanol on cardiac tissues, 473
epinephrine and carotid sinus control of capacity, 249
hemodynamic effects of exogenous and endogenous vasopressin at low plasma concentrations, 346
hepatic congestion and renal function, 883
impedance and pulmonary venous hypertension, 902
inhibition of glycolysis in the denervated heart, 338
instantaneous femoral artery pressure-flow relations, 88
interval-strength relation of intact heart, 559
intestinal vascular pressure-volume linearity, 551
intrinsic innervation of the heart, 74
labeled catecholamine uptake in the heart, 329
local anesthetics and role of sodium in force development of ventricular muscle and Purkinje fibers, 666
mechanism of decreased right and left ventricular end-diastolic volumes during continuous positive-pressure ventilation, 467
mitochondrial calcium transport in the ischemic heart, 814
myocardial perfusion during exercise after infarct, 59
ouabain binding to cardiac sarcolemma, 710
pericardium and cardiac performance, 27
prostaglandins and renin release, 99
reflex cardiovascular and respiratory effects of serotonin, 509
regional O_2 consumption in infarcts, 400
relationship between cardiac oxygen usage, adenosine content, and coronary resistance, 875
tracer studies of the central circulation, 10
transmural autoregulation of coronary blood flow, 599
ultrasonic attenuation, backscatter, and collagen, 49
vasodilation and flow effects in the heart, 312
Animals (guinea pig)
coronary flow with low O_2, adenosine, and occlusion, 392
disopyramide, quinidine, and muscarinic receptors, 855
influence of pH on effects of lidocaine in ventricular myocardium, 542
role of adenosine in atrioventricular conduction disturbances during hypoxia, 684
Animals (hamster)
myogenic autoregulation of renal microcirculation, 226
Animals (monkey)
pulse wave velocity and aortic distensibility resulting from regression of atherosclerosis, 425

Animals (rabbit)
aortic smooth muscle cell kinetics after intimal injury, 182
carotid sinus baroreceptor reflex and hypertension, 890
characterization of refractoriness in the sinus mode, 742
elevated renal vein pressure and prostaglandins, 231
graded hypoxia and myocardial relaxation, 516
pinocytosis in lung endothelium, 384
role of adenosine in atrioventricular conduction disturbances during hypoxia, 684
structure of freeze-fractured sarcolemma in normal and anoxic myocardium, 131
ultrasonic attenuation, backscatter, and collagen, 49
Animals (rat)
action potentials in cardiac hypertrophy, 443
altered myocardial mechanics in drug-induced diabetes, 922
angiotension II binding sites in mesenteric artery, 278
baroreceptor function in SHR; effect of preventing hypertension, 829
brain adenosine levels during seizures, 568
brain catecholamines in acute myocardial ischemia, 166
centrogenic blood volume and pulmonary changes, 366
comparison of Ca^{2+}, Sr^{2+}, and Mn^{2+} fluxes in mitochondria of the perfused heart, 721
decay of circulating low density lipoproteins and tissue enzyme levels, 433
effects of calcium on the sarcomere length-tension relation in cardiac muscle, 610
effects of diabetes on performance and metabolism of the heart, 911
effects of phospholipid methylation on β-adrenergic receptors in normal and hypertrophied myocardium, 536
heparin inhibition of smooth muscle cell growth, 578
medullary hemodynamics and natriuresis, 839
morphometry of early postnatal aortic development, 417
β-receptors in cardiac cell culture, 41
renal vascular reactivity in deoxycorticosterone acetate-induced hypertension, 675
time course of baroreceptor resetting under normotensive and spontaneously hypertensive conditions, 821
trophic effect of norepinephrine on portal vein in organ culture, 770
Animals (sheep)
angiotensin II and its effect on heart rate, 286
cardiac Purkinje fibers and K^+ and Na^+ activities, 692
Aorta
thoracic, morphometric study of early postnatal development (rat), 417
Aortic muscle cells
differences between thoracic and abdominal segments after intimal injury (rabbit), 182
Aortic valve leaflets
elastic modulus of, in vivo and in vitro (dog), 792
Arrhythmias
computer simulation in a network of coupled excitable elements, 454
early ventricular, in acute regional myocardial ischemia (dog, pig), 151
Arterial cells
and the mass uptake of cholesterol ester from low density lipoproteins (human), 374
Arterial CO_2
and coronary blood flow (dog), 217
Arteries
femoral, instantaneous pressure-flow relations (dog), 88
mesenteric, and angiotensin II binding sites (rat), 278
Atherogenesis
linkage to lipoprotein clearance and tissue enzymes, 301
Atherosclerosis
reduction in pulse wave velocity and improvement of aortic distensibility accompanying regression (monkey), 425
Atrial fibers
isolated, mechanisms for impulse initiation (human), 267
Atrioventricular conduction
possible role of adenosine in disturbances during hypoxia (guinea pig, rabbit), 684
Attenuation
ultrasonic, and backscatter, dependence on collagen content in the heart (dog, rabbit), 49
Autonomic blockade
cardiovascular response to static exercise during (cat), 530
Autoregulation (*see also* Blood flow)
myogenic, of renal microcirculation (hamster), 226

B

Backscatter
and ultrasonic attenuation, dependence on collagen content in the heart (dog, rabbit), 49
Baroreceptor function
and changes in strain sensitivity under normotensive and spontaneously hypertensive conditions (rat), 821
in spontaneous hypertension, effect of prevention (rat), 829
Baroreceptor reflex
and epinephrine (dog), 249
Baroreceptors
carotid sinus
modulation of sinus node function (human), 208
reflex control of circulation in medial sclerotic and renal hypertensive animals (rabbit), 890
Benzocaine
and the role of sodium in force development by ventricular muscle and Purkinje fibers (dog), 666
Blockade
adrenergic receptor, and effects of intravenously infused histamine on forelimb transvascular protein efflux (dog), 584
Blood flow
coronary
arterial CO_2 and myocardial O_2 consumption (dog), 217
pressure-flow relationships, and measurement of intramyocardial pressure and critical closing pressure (Letter to the Editor, and Reply), 934
regulation by adenosine, 807
transmural autoregulation in hyperfused myocardium (dog), 599
myocardial
correlation between acute reductions and function (dog), 201
improvement during vasodilation (dog), 108
regional, effects of infarcted myocardium (dog), 701
sympathetic modulation of hypercapnic cerebral vasodilation (dog), 293
Blood volume
centrogenic, and pulmonary changes (rat), 366
Brain catecholamines
in acute myocardial ischemia (rat), 166

C

Ca^{2+}
comparison with Sr^{2+} and Mn^{2+} fluxes in mitochondria of perfused heart (rat), 721

Caffeine
reversal of length-dependent changes in myocardial contractile state (cat), 592
Calcium
altered transport ischemic hearts (dog), 814
effects on sarcomere length-tension relation in cardiac muscle (rat), 610
Cardenolides
and adrenergic neuroeffector junction (dog), 845
Cardiac cell culture
subclassification of β-adrenergic receptors (rat), 41
Cardiac conduction system
intrinsic innervation; effects on conduction in atrium, atrioventricular node, and proximal bundle branch (dog), 74
Cardiac hypertrophy
characteristics of action potentials (rat), 443
Cardiac performance
significance of the intact pericardium (dog), 27
Cardiac sarcolemma
and ouabain binding (dog), 710
Cardiac tissues
electrophysiological effects of ethanol, acetaldehyde, and acetate (dog, guinea pig), 473
Cathecholamines
and permeability (dog), 584
labeled, uptake in the heart (dog), 329
Cathecholamine secretion
role of renin-angiotensin system in mediation (cat), 835
Cell swelling
correlation with necrosis in myocardial ischemia (dog), 653
Central nervous system
influence of γ-aminobutyric acid on arterial pressure and heart rate (cat), 80
Cholesterol ester
mass uptake in arterial cells (human), 374
Circulation
central, tracer studies in (dog), 10
Circulation research
useful statistical methods, 1
Collagen content
in the heart, dependence of ultrasonic attenuation and backscatter on (dog, rabbit), 49
Coronary arteries
contribution to perfusion of normal and hypertrophied right ventricles (dog), 190
Coronary occlusion
experimental, and reflex sympathetic activity, 627

D

Deoxycorticosterone acetate
induction of hypertension, and significance of sodium, sympathetic innervation, and central adrenergic structures on renal vascular responsiveness (rat), 675
Diabetes
altered myocardial mechanics (rat), 922
and vascular disease (human), 620
effect on performance and metabolism of the heart (rat), 911
effect on ultrastructure of umbilical arteries (human), 620
Diastole
comparison of intramyocardial pressure in beating and arrested hearts (dog), 258
Disopyramide
anticholinergic effects on myocardium (guinea pig), 855

E

Edema
pulmonary hemorrhagic, induced by cerebral compression (rat), 366
Elastic modulus
of aortic valve leaflets (dog), 792
End-systolic pressure (*see* Pressure)
Entrance block
induction by focal depolarization of mammalian ventricular tissues (dog), 238
Epinephrine
and the carotid sinus baroreceptor reflex (dog), 249
Ethanol
electrophysiological effects on cardiac tissues (dog, guinea pig), 473
Exercise
static, cardiovascular response during selective autonomic blockade (cat), 530

F

Flow rate
and vasodilation, effects on the heart (dog), 312

G

Glycolysis
inhibition in denervated heart (dog), 338

H

Heart
denervated, inhibition of glycolysis (dog), 338
effect of diabetes on performance and metabolism (rat), 911
intact, interval-strength relation of (cat, dog), 559
mammalian, role of relaxation in ventricular function, 637
perfused
comparison of Ca^{2+}, Sr^{2+}, and Mn^{2+} fluxes in mitochondria (rat), 721
role of prostacylcin in preservation of ischemic myocardial tissue (cat), 757
Heart rate
and angiotensin II (sheep), 286
Heparin
inhibition of arterial smooth muscle cell growth (rat), 578
Hepatic congestion
and renal function (dog), 883
Histamine
effects of transvascular protein efflux after adrenergic receptor blockade (dog), 584
Hydrolase activity
and clearance rates of circulating ^{125}I-labeled low density lipoproteins (rat), 433
Hypertension
acute renovascular (dog), 356
and the carotid sinus baroreceptor reflex (rabbit), 890
pulmonary venous, pulsatile hemodynamic responses of the pulmonary circulation (dog) 902
renal, action potentials in cardiac hypertrophy (rat), 443
spontaneous, baroreceptor function and changes in strain sensitivity (rat), 821
Hypoxia
graded, and myocardial relaxation (kitten, rabbit), 516
moderate, vasodilator responses after adenosine injection or coronary occlusion (guinea pig), 392
role of adenosine in atrioventricular conduction disturbances (guinea pig, rabbit), 684

I

Impulse initiation
in isolated atrial fibers (human), 267
Indomethacin
effect on renin release during chronic sodium depletion (dog), 99
Infarction
effects on regional blood flow measurements to ischemic heart regions (dog), 701
myocardial, analytical model of, in left ventricle (dog), 728
Infarcts
and regional O_2 consumption (dog), 400
Innervation
intrinsic, and cardiac conduction system (dog), 74
Interval-strength relation
of intact heart (cat, dog), 559
Ionic currents
cardiac, and hypoxia (cat), 501
Ischemia
acute myocardial, activation of brain catecholaminergic neurons by cardiac vagal afferents (rat), 166
acute regional, flow of injury current and patterns of excitation in isolated hearts (dog, pig), 151
altered mitochondrial calcium transport in the heart (dog), 814
myocardial
and role of prostacyclin in preservation of tissue in perfused heart (cat), 757
correlation between cell swelling and necrosis (dog), 653
Isoproterenol
effect on embryonic ventricular tissue (chick), 493

L

Length-tension relation
sarcomere, effects of calcium in cardiac muscle (rat), 610
Lidocaine
influence of pH on its effects in ventricular myocardium (guinea pig), 542
Lipoprotein clearance
and tissue enzymes, 301
Low density lipoproteins
decay of circulating LDL and tissue enzyme levels (rat), 433
Lung
albumin-excluded volume in (dog), 866
Lung endothelium
morphometry of pinocytotic vesicles (rabbit), 384

M

Magnetocardiogram
normal, multipole analysis (human), 117
Meclofenamate
effect on renin release during chronic sodium depletion (dog), 99
Medullary hemodynamics
and natriuresis (rat), 839
Microelectrodes
measurement of intracellular K^+ and Na^+ activity and resting membrane potential cardiac Purkinje fibers (sheep), 692
Microspheres
and measurement of cerebral blood flow (dog), 293
Mitochondria
comparison of Ca^{2+}, Sr^{2+}, and Mn^{2+} fluxes of perfused heart (rat), 721
Mitochondrial function
calcium transport in acutely ischemic hearts (dog), 814
Models
computer simulation of arrhythmias in a network of coupled excitable elements, 454
use of frequency domain technique for modeling multiple dilution data with Laguerre functions, 312
waterfall, flow through collapsible tubes at low Reynolds numbers, 68
Multipole analysis
and the normal magnetocardiogram (human), 117
Muscarinic receptors
cardiac, interaction with disopyramide, quinidine, and procainamide (guinea pig), 855
Muscimol
and control of cardiovascular function (cat), 80
Muscle
cardiac
effects of calcium on the sarcomere length-tension relation (rat), 610
relationship between oxygen usage, adenosine content, and coronary resistance (dog), 875
smooth
aortic, cell growth kinetics after intimal injury (rabbit), 182
aortic, inhibition of cell proliferation by heparin (rat), 578
vascular, effects of acetylstrophanthidin and ouabain on sympathetic adrenergic neuroeffector junction (dog), 845
Muscle contractions
papillary, and end-systolic pressure-volume relations (cat), 20
Myocardial contractile state
caffeine reversal of length-dependent changes (cat), 592
Myocardial mechanics
effects of drug-induced diabetes (rat), 922
Myocardial perfusion
during exercise after infarct (dog), 59
Myocardium
anticholinergic effects of disopyramide and quinidine (guinea pig), 855
correlation between acute reductions in blood flow and function (dog), 201
effect of phospholipid methylation on β-adrenergic receptors (rat), 536
hyperfused, transmural variation in autoregulation of coronary blood flow (dog), 599
infarcted, effects on regional blood flow measurements to ischemic regions (dog), 701
ischemic, and improvement in collateral myocardial blood flow during vasodilation (dog), 108
normal and anoxic, structure of the freeze-fractured sarcolemma (rabbit), 131
ventricular
effects of pH on the action of lidocaine (guinea pig), 542
modulation of electrical coupling by angiotensin II, 524

N

Necrosis
correlation with cell swelling in myocardial ischemia (dog), 653
ionic currents in voltage-clamped ventricular muscle (cat), 501
Neuroeffector junction
effects of acetylstrophanthidin and ouabain, in vascular smooth muscle (dog), 845
Norepinephrine
trophic effect on portal vein in organ culture (rat), 770
Normotension
effect of preventing hypertension; baroreceptor function (rat), 829

O

Occlusion
circumflex coronary artery, regional myocardial blood flow during treadmill exercise (dog), 59
coronary artery
and vasodilator responses to moderate hypoxia (guinea pig), 392
effect on regional arterial and venous blood flow, and on O_2 saturation, extraction, and consumption (dog), 400
Ouabain
binding to cardiac sarcolemma (dog), 710
effects on sympathetic adrenergic neuroeffector junction in canine vascular smooth muscle (dog), 845
Oxygen consumption
of the nonworking and potassium chloride-arrested heart (dog), 408

P

Papillary muscle
biphasic changes in relaxation rate during progressive hypoxia (kitten), 516
Perfusion
myocardial, during exercise after infarct (dog), 59
Pericardium
intact, significance for cardiac performance (dog), 27
pH
effects on the action of lidocaine in ventricular myocardium (guinea pig), 542
Phenol
effect on autonomic neural control of electrophysiological characteristics of anterior left ventricle (dog), 33
Phospholipid methylation
effect on β-adrenergic receptors in normal and hypertrophied myocardium (rat), 536
Pinocytosis
in lung endothelium (rabbit), 384
Portal vein
trophic effect of norepinephrine in organ culture (rat), 770
Positive-pressure ventilation
and ventricular volume (dog), 467
Pressure
elevated pulmonary venous, adaptation to acute and chronic pulmonary venous hypertension (dog), 902
elevated renal vein, and prostaglandins (rabbit), 231
end-systolic pressure-volume relations estimated from physiologically loaded papillary muscle contractions (cat), 20
increased vascular, effect on albumin-excluded volume and lymph flow in lung (dog), 866
intramyocardial, comparison of distribution across left ventricular wall in beating heart during diastole and in arrested heart (dog), 258
venous, instantaneous femoral artery pressure-flow relations (dog), 88
Pressure-flow relations
effect of unilateral elevation of femoral venous pressure (dog), 88
Pressure-volume relationship
vascular, linearity of (dog), 551
Procaine
and the role of sodium in force development by ventricular muscle and Purkinje fibers (dog), 666
Prostacyclin
role in preservation of ischemic myocardial tissue in perfused heart (cat), 757
Prostaglandins
and elevated renal vein pressure (rabbit), 231
and renin release (dog), 99
Pulmonary edema
hemorrhagic, induced by cerebral compression (rat), 366
Purkinje fibers
cardiac, intra- and extracellular K^+ and Na^+ activities and resting membrane potential (sheep), 692
effects of local anesthetics and of sodium on action potential and contractile force (dog), 666
pharmacokinetic studies of taurine (cow), 763

Q

Quinidine
anticholinergic effects on myocardium (guinea pig), 855

R

Radionuclide studies
labeled catecholamine uptake in the heart (dog), 329
vasodilation and flow effects in the heart (dog), 312
Receptors
β-adrenergic subclassification in cultured cardiac myoblasts and fibroblasts (rat), 41
muscarinic cardiac, interaction with disopyramide, quinidine, and procainamide (guinea pig), 855
Reflexes
baroreceptor, and epinephrine (dog), 249
Reflex sympathetic activity
elicited by experimental coronary occlusion (disagreement on) (Letter to the Editor), 627
Refractoriness
sinus node, characterization of (rabbit), 742
Relaxation
role in ventricular function in the mammalian heart, 637
Renal function
and hepatic congestion (dog), 883
Renal hypertension
action potentials in cardiac hypertrophy (rat), 443
Renal microcirculation
evidence for myogenic autoregulation (hamster), 226
Renal vascular reactivity
in deoxycorticosterone acetate-induced hypertension (rat), 675
Renal vein
elevated pressure and prostaglandins (rabbit), 231
Renin
stimulus-secretion coupling, 485
Renin-angiotensin system
interaction with sympathetic nervous system in systemic hemodynamics and regional blood flow responses (dog), 356
role in mediation of adrenal catecholamine secretion (cat), 835

S

Sarcolemma
cardiac, and ouabain binding (dog), 710
freeze-fractured, structure in the normal and anoxic myocardium (rabbit), 131
Seizures
brain adenosine levels during (rat), 568
Serotonin
reflex cardiovascular and respiratory effects (dog), 509
Sinus node
characterization of refractoriness (rabbit), 742
function, baroreflex modulation of (human), 208
Sinus node region
electrical activity from (dog), 775

Sodium
effect on renal vascular reactivity after nephrectomy and treatment with deoxycorticosterone acetate (rat), 675
role in force development by ventricular muscle and Purkinje fibers (dog), 666
Statistical methods
useful in circulation research, 1
Stimulus-secretion coupling
of renin, 485
Subjects (human)
baroreflex modulation of sinus node function, 208
diabetic metabolism and vascular disease, 620
impulse initiation in isolated atrial fibers, 267
mass uptake of cholesterol ester from low density lipoproteins by arterial cells, 374
multipole analysis of the normal magnetocardiogram, 117

T

Taurine
pharmacokinetic studies in Purkinje fibers (cow), 763
Thoracic aorta
morphometric study of early postnatal development (rat), 417
Tissue
enzymes, and lipoprotein clearance, 301
Tracer studies
of central circulation (dog), 10
Triangulation technique
ultrasonic, for analysis of left ventricular wall thickness and shear (dog), 173

U

Ultrasonic attenuation
and backscatter, dependence on collagen content in the heart (dog, rabbit), 49

V

Vascular disease
effect of the diabetic metabolism on (human), 620
Vasodilation
and flow rate, effects on the heart (dog), 312
hypercapnic cerebral, comments on sympathetic modulation (dog), 293
renal, role of medullary hemodynamics in natriuresis (rat), 839
Vasopressin
hemodynamic effects at low plasma concentrations (dog), 346
Ventricles
embryonic, desensitization to physiological and biochemical effects of isoproterenol, 493
left
analytical model of myocardial infarction (dog), 728
autonomic nerve control of ventricular refractoriness (dog), 33
isovolumic, biphasic changes in relaxation rate during progressive hypoxia (rabbit), 516
right, contributions of right and left coronary arteries to perfusion of normal and hypertrophied ventricles (dog), 190
tracer mixing in (dog), 10
voltage-clamped, ionic currents during hypoxia (cat), 501
Ventricular arrhythmias
in acute regional myocardial ischemia (dog, pig), 151
Ventricular function
role of relaxation in the mammalian heart, 637
Ventricular muscle
effects of local anesthetics and of sodium on action potential and contractile force (dog), 666
Ventricular refractoriness
autonomic nerve control (dog), 33
Ventricular tissues
automaticity and entrance block induced by focal depolarization (dog), 238
Ventricular volume
and positive-pressure ventilation (dog), 467
Ventricular wall, left
analysis of thickness and shear by ultrasonic triangulation technique (dog), 173

W

Waterfall model
flow through collapsible tubes, 68

Circulation Research

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

VOLUME 47

July-December

1980

AMERICAN HEART ASSOCIATION, INC.

Circulation Research

An Official Journal of the American Heart Association

Circulation Research provides a medium for bringing together basic research on the cardiovascular system from various disciplines including biology, biochemistry, biophysics, morphology, pathology, physiology, and pharmacology. The Journal also will accept for publication manuscripts on clinical research that contribute to an understanding of fundamental problems.

Editor
BRIAN F. HOFFMAN

Associate Editor
MICHAEL R. ROSEN

Editorial Office: Department of Pharmacology, College of Physicians and Surgeons,
630 West 168th Street, New York, New York 10032

EDITORIAL BOARD

NORMAN R. ALPERT
ROBERT J. BACHE
ROGER C. BARR
ARTHUR L. BASSETT
DEREK BERGEL
JOHN A. BEVAN
COLIN M. BLOOR
F. NORMAN BRIGGS
ARTHUR M. BROWN
EDWARD CARMELIET
ROBERT B. CASE
SHU CHIEN
PAUL F. CRANEFIELD
JAMES O. DAVIS
DAVID E. DONALD
JAMES M. DOWNEY
S. EVANS DOWNING
GEORGE I. DRUMMOND
DIRK DURRER
ALEXANDRE FABIATO
ERIC O. FEIGL
CARLOS M. FERRARIO
HARRY A. FOZZARD
JOHN W. FUNDER
W. RAY GIBBONS
JOSEPH P. GILMORE
JOSEPH C. GREENFIELD, JR.
FRANCIS J. HADDY
JOEL HARDMAN
LLOYD L. HEFNER
DONALD D. HEISTAD
MICHAEL HEYMANN
JULIEN I.E. HOFFMAN
NORMAN K. HOLLENBERG
ROBERT B. JENNINGS
BÖRJE JOHANSSON
PHILIP A. KHAIRALLAH
HERMES A. KONTOS
MATTHEW N. LEVY
THOMAS C. LLOYD, JR.
MELVIN L. MARCUS
JEAN M. MARSHALL
PAUL MARTIN
JOHN C. McGIFF
ISRAEL MIRSKY
JAMES R. NEELY
RAY A. OLSSON
SOLBERT PERMUTT
BERTRAM PITT
MICHAEL J. PURVES
EUGENE M. RENKIN
KIICHI SAGAWA
ANTONIO SCARPA
JAMES SCHEUER
EVELINE E. SCHNEEBERGER
SIDNEY S. SCHREIBER
ARTIN A. SHOUKAS
LEONARD T. SKEGGS
BURTON E. SOBEL
ANDREW P. SOMLYO
MADISON S. SPACH
NORMAN C. STAUB
HAROLD C. STRAUSS
S. P. SUTERA
MERRILL TARR
AUBREY E. TAYLOR
ROBERT E. TEN EICK
MARIO VASSALLE
HSUEH-HWA WANG
AUGUST M. WATANABE
JOHN B. WEST
RICHARD P. WHITE
JOHN R. WILLIAMSON
ANDREW L. WIT
HARVEY WOLINSKY
RADOVAN ZAK
BENJAMIN W. ZWEIFACH

ROBERT M. BERNE, JULIUS H. COMROE, JR., MATTHEW N. LEVY, *Consulting Editors*
SIVIA BRODSKY, *Managing Editor*

PUBLICATIONS COMMITTEE, AMERICAN HEART ASSOCIATION

DONALD HARRISON, *Chairman*
Stanford, Calif.

Harriet P. Dustan
Birmingham, AL

John W. Evers
Chicago, IL

Joan B. Fitzmaurice
Chestnut Hill, MA

Edgar Haber
Boston, MA

Thomas F. Hannon
Chicago, IL

Brian F. Hoffman
New York, NY

J. O'Neal Humphries
Columbia, SC

Fletcher McDowell
White Plains, NY

Albert J. Miller
Chicago, IL

Robert A. O'Rourke
San Antonio, TX

Shahbudin H. Rahimtoola
Portland, OR

Elliot Rapaport
San Francisco, CA

Oscar M. Reinmuth
Pittsburgh, PA

Abraham M. Rudolph
San Francisco, CA

Circulation Research

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

VOLUME 47

July–December 1980

No. 1 (July)

Special Article. Some Statistical Methods Useful in Circulation Research. *Sylvan Wallenstein, Christine L. Zucker, and Joseph L. Fleiss* . . . 1

Inlet and Intrachamber Concentration Distributions in Tracer Studies of the Canine Central Circulation and Their Relation to the Isotope Dilution Residue Function. *Frank S. Castellana, Steven M. Snapinn, See Ying Tam, and Robert B. Case* . . . 10

End-Systolic Pressure-Volume Relation Estimated from Physiological Loaded Cat Papillary Muscle Contractions. *Walter J. Paulus, Victor A. Claes, and Dirk L. Brutsaert* . . . 20

The Significance of the Intact Pericardium for Cardiac Performance in the Dog. *Olav Stokland, Målfrid Molaug Miller, Jon Lekven, and Arnfinn Ilebekk* . . . 27

Epicardial Phenol Interrupts Refractory Period Responses to Sympathetic but Not Vagal Stimulation in Canine Left Ventricular Epicardium and Endocardium. *James B. Martins and Douglas P. Zipes* . . . 33

Subclassification of β-Adrenergic Receptors in Cultured Rat Cardiac Myoblasts and Fibroblasts. *Yat H. Lau, Richard B. Robinson, Michael R. Rosen, and John P. Bilezikian* . . . 41

The Dependence of Ultrasonic Attenuation and Backscatter on Collagen Content in Dog and Rabbit Hearts. *James W. Mimbs, Matthew O'Donnell, Daniel Bauwens, James W. Miller, and Burton E. Sobel* . . . 49

Regional Myocardial Blood Flow during Graded Treadmill Exercise following Circumflex Coronary Artery Occlusion in the Dog. *David S. Hess and Robert J. Bache* . . . 59

Flow through Collapsible Tubes at Low Reynolds Numbers: Applicability of the Waterfall Model. *Carol K. Lyon, Jerry B. Scott, and C. Y. Wang* . . . 68

Intrinsic Innervation of the Canine Heart: Effects on Conduction in the Atrium, Atrioventricular Node, and Proximal Bundle Branch. *Donald V. Priola* . . . 74

Central Nervous System Mechanisms Involving GABA Influence Arterial Pressure and Heart Rate in the Cat. *Daniel J. Williford, Betty L. Hamilton, Janette Dias Souza, Thomas P. Williams, Joseph A. DiMicco, and Richard A. Gillis* . . . 80

Instantaneous Femoral Artery Pressure-Flow Relations in Supine Anesthetized Dogs and the Effect of Unilateral Elevation of Femoral Venous Pressure. *Walter Ehrlich, Robert W. Baer, Ronald F. Bellamy, and Randall Randazzo* . . . 88

Effects of Indomethacin and Meclofenamate on Renin Release and Renal Release and Renal Hemodynamic Function during Chronic Sodium Depletion in Conscious Dogs. *Jack M. DeForrest, James O. Davis, Ronald H. Freeman, Andrea A. Seymour, Brian P. Rowe, Gary M. Williams, and Thomas P. Davis* . . . 99

Apparent Improvement in Canine Collateral Myocardial Blood Flow during Vasodilation Depends on Criteria Used to Identify Ischemic Myocardium. *Randolph E. Patterson and Edward S. Kirk* . . . 108

The Normal Human Magnetocardiogram: II. A Multipole Analysis. *Pekka J. Karp, Toivo E. Katila, Matti Saarinen, Pentti Siltanen, and Timo T. Varpula* . . . 117

Structure of the Freeze-Fractured Sarcolemma in the Normal and Anoxic Rabbit Myocardium. *Joy S. Frank, Sarah Beydler, Michael Kreman, and Eric E. Rau* . . . 131

Erratum . . . 143

Instructions to Authors . . . 144

News from the American Heart Association . . . 147

No. 2 (August)

Flow of "Injury" Current and Patterns of Excitation during Early Ventricular Arrhythmias in Acute Regional Myocardial Ischemia in Isolated Porcine and Canine Hearts: Evidence for Two Different Arrhythmogenic Mechanisms. *Michiel J. Janse, Frans J. L. van Capelle, Hemmy Morsink, André G. Kléber, Francien Wilms-Schopman, René Cardinal, Christoph Naumann d'Alnoncourt, and Dirk Durrer* . . . 151

Activation of Brain Catecholaminergic Neurons by Cardiac Vagal Afferents during Acute Myocardial Ischemia in the Rat. *Michael J. Sole, M. Nasir Hussain, and Wolfgang Lixfeld* . . . 166

The Analysis of Left Ventricular Wall Thickness and Shear by an Ultrasonic Triangulation Technique in the Dog. *Genta Osakada, Shigetake Sasayama, Chuichi Kawai, Akina Hirakawa, W. Scott Kemper, Dean Franklin, and John Ross, Jr.* . . . 173

In Vivo Aortic Muscle Cell Growth Kinetics: Differences between Thoracic and Abdominal Segments after Intimal Injury in the Rabbit. *Itzhak D. Goldberg, Michael B. Stemerman, Bernard J. Ransil, and Robert L. Fuhro* . . . 182

Fractional Contributions of the Right and Left Coronary Arteries to Perfusion of Normal and Hypertrophied Right Ventricles of Conscious Dogs. *Paul A. Murray and Stephen F. Vatner* . . . 190

Correlation between Acute Reductions in Myocardial Blood Flow and Function in Conscious Dogs. *Stephen F. Vatner* ... 201

Nonlinearities of the Human Carotid Baroreceptor-Cardiac Reflex. *Dwain L. Eckberg* ... 208

Arterial CO_2, Myocardial O_2 Consumption, and Coronary Blood Flow in the Dog. *Thom Rooke and Harvey V. Sparks* ... 217

Direct Evidence for Myogenic Autoregulation of the Renal Microcirculation in the Hamster. *Joseph P. Gilmore, Kurtis G. Cornish, Stephanie D. Rogers, and William L. Joyner* ... 226

Exaggerated Prostaglandin and Thromboxane Synthesis in the Rabbit with Renal Vein Constriction. *Robert Zipser, Stuart Myers, and Philip Needleman* ... 231

Automaticity and Entrance Block Induced by Focal Depolarization of Mammalian Ventricular Tissues. *Gregory R. Ferrier and James E. Rosenthal* ... 238

Epinephrine and the Carotid Sinus Baroreceptor Reflex: Influence on Capacitive and Resistive Properties of the Total Systemic Vascular Bed of the Dog. *Artin A. Shoukas and Martha Connolly Brunner* ... 249

Comparison of the Distribution of Intramyocardial Pressure across the Canine Left Ventricular Wall in the Beating Heart during Diastole and in the Arrested Heart: Evidence of Epicardial Muscle Tone during Diastole. *Paul D. Stein, Hani N. Sabbah, Mario Marzilli, and Edward F. Blick* ... 258

Mechanisms for Impulse Initiation in Isolated Human Atrial Fibers. *Luc Mary-Rabine, Allan J. Hordof, Peter Danilo, Jr., James R. Malm, and Michael R. Rosen* ... 267

Identification and Characterization of the High Affinity Vascular Angiotensin II Receptor in Rat Mesenteric Artery. *Stephen Gunther, Michael A. Gimbrone, Jr., and R. Wayne Alexander* ... 278

Mechanisms by which Angiotensin II Affects the Heart Rate of the Conscious Sheep. *Warwick B. Lee, Mansel J. Ismay, and Eugenie R. Lumbers* ... 286

Letters to the Editor ... 293

News from the American Heart Association ... 295

No. 3 (September)

Special Article: A Proposal Linking Clearance of Circulating Lipoproteins to Tissue Metabolic Activity as a Basis for Understanding Atherogenesis. *Harvey Wolinsky* ... 301

Effect of Vasodilation and Flow Rate on Capillary Permeability Surface Product and Interstitial Space Size in the Coronary Circulation: A Frequency Domain Technique for Modeling Multiple Dilution Data with Laguerre Functions. *Colin P. Rose, Carl A. Goresky, Pierre Bélanger, and Ming-Jeh Chen* ... 312

Labeled Catecholamine Uptake in the Dog Heart: Interaction between Capillary Wall and Sympathetic R Nerve Uptake. *Daniel Cousineau, Colin P. Rose, and Carl A. Goresky* ... 329

Inhibition of Glycolysis in the Denervated Dog Heart. *Angela J. Drake, Demetrios E. Papadoyannis, Roger G. Butcher, John Stubbs, and Mark I. M. Noble* ... 338

Hemodynamic Effects of Exogenous and Endogenous Vasopressin at Low Plasma Concentrations in Conscious Dogs. *Jean-Pierre Montani, Jean-François Liard, Josiane Schoun, and Jan Möhring* ... 346

Acute Renovascular Hypertension in Conscious Dogs. Interaction of the Renin-Angiotensin System and Sympathetic Nervous System in Systemic Hemodynamics and Regional Blood Flow Responses. *Haralambos Gavras and Chang-seng Liang* ... 356

Centrogenic Pulmonary Hemorrhagic Edema Induced by Cerebral Compression in Rats. Mechanism of Volume and Pressure Loading in the Pulmonary Circulation. *Hsing I. Chen, Jyh F. Liao, Lih Kuo, and Shung T. Ho* ... 366

The Mass Uptake of Cholesterol Ester from Low Density Lipoproteins by Cultured Smooth Muscle and Adventitial Cells of Human Aortas. *Syed S. Alam, Kenneth A. Solen, Don L. Layman, Matthew C. Riddle, and William E. Connor* ... 374

Morphometry of Pinocytotic Vesicles in the Capillary Endothelium of Rabbit Lungs using Automated Equipment. *Joan Gil and Dennis A. Silage* ... 384

Vasodilator Responses to Moderate Hypoxia after Submaximal Adenosine Injection or Coronary Occlusion in Isolated Perfused Guinea Pig Hearts. *David F. Stowe* ... 392

Effect of Coronary Artery Occlusion on Regional Arterial and Venous O_2 Saturation, O_2 Extraction, Blood Flow, and O_2 Consumption in the Dog Heart. *Harvey R. Weiss* ... 400

Oxygen Consumption of the Nonworking and Potassium Chloride-Arrested Dog Heart. *Colin L. Gibbs, Demetrios E. Papadoyannis, Angela J. Drake, and Mark I. M. Noble* ... 408

Morphometric Study of Early Postnatal Development of the Thoracic Aorta in the Rat. *Giorgio Olivetti, Piero Anversa, Massimo Melissari, and Alden V. Loud* ... 417

Reduction in Pulse Wave Velocity and Improvement of Aortic Distensibility Accompanying Regression of Atherosclerosis in the Rhesus Monkey. *David J. Farrar, Harold D. Green, William D. Wagner, and M. Gene Bond* ... 425

Hydrolase Activities in the Rat Aorta. IV. Relation between Clearance Rates of Circulating ^{125}I-labeled Low-Density Lipoproteins and Levels of Tissue Hydrolase Activity. *Harvey Wolinsky, Debra Katz, Ronald Markle, Joan Mills, Shari Brem, and Sylvia Wassertheil-Smoller* ... 433

Characteristics of Action Potentials of Hypertrophied Myocardium from Rats with Renal Hypertension. *Ronald S. Aronson* ... 443

Computer Simulation of Arrhythmias in a Network of Coupled Excitable Elements. *Frans J. L. van Capelle and Dirk Durrer* ... 454

Mechanism of Decreased Right and Left Ventricular End-Diastolic Volumes during Continuous Positive-Pressure Ventilation in Dogs. *James E. Fewell, Dana R. Abendschein, C. Jeffrey Carlson, Elliot Rapaport, and John F. Murray* ... 467

Electrophysiological Effects of Ethanol, Acetaldehyde, and Acetate on Cardiac Tissues from Dog and Guinea Pig. *Eric S. Williams, Michael J. Mirro, and John C. Bailey* ... 473

Erratum ... 479

News from the American Heart Association ... 480

No. 4 (October)

Brief Reviews: Stimulus-Secretion Coupling of Renin: Role of Hemodynamic and Other Factors. *John C. S. Fray* ... 485

Desensitization of Chick Embryo Ventricle to the Physiological and Biochemical Effects of Isoproterenol: Evidence for Uncoupling of the β Receptor-Adenylate Cyclase Complex. *James D. Marsh, William H. Barry, Eva J. Neer, R. Wayne Alexander, and Thomas W. Smith* ... 493

Ionic Currents during Hypoxia in Voltage-Clamped Cat Ventricular Muscle. *Arthur Vleugels, Johan Vereecke, and Edward Carmeliet* ... 501

Reflex Cardiovascular and Respiratory Effects of Serotonin in Conscious and Anesthetized Dogs. *Irving H. Zucker and Kurtis G. Cornish* ... 509

Biphasic Changes in Maximum Relaxation Rate during Progressive Hypoxia in Isometric Kitten Papillary Muscle and Isovolumic Rabbit Ventricle. *Martin G. St. John Sutton, Erik L. Ritman, and Norman F. Paradise* 516

Angiotensin II Increases Electrical Coupling in Mammalian Ventricular Myocardium. *Kent Hermsmeyer* ... 524

Cardiovascular Response to Static Exercise during Selective Autonomic Blockade in the Conscious Cat. *George Diepstra, William Gonyea, and Jere H. Mitchell* ... 530

Effect of Phospholipid Methylation on β-Adrenergic Receptors in the Normal and Hypertrophied Rat Myocardium. *Constantinos J. Limas* ... 536

The Influence of pH on the Electrophysiological Effects of Lidocaine in Guinea Pig Ventricular Myocardium. *Augustus O. Grant, Laura J. Strauss, Andrew G. Wallace, and Harold C. Strauss* ... 542

Linearity of the Vascular Pressure-Volume Relationship of the Canine Intestine. *Carl F. Rothe, Tom D. Bennett, and Bruce L. Johns* ... 551

The Contractile State of Cat and Dog Heart in Relation to the Interval between Beats. *J. Pidgeon, M. Lab, A. Seed, G. Elzinga, D. Papadoyannis, and M. I. M. Noble* ... 559

Changes in Brain Adenosine during Bicuculline-Induced Seizures in Rats: Effects of Hypoxia and Altered Systemic Blood Pressure. *H. Richard Winn, Joseph E. Welsh, Rafael Rubio, and Robert M. Berne* ... 568

Inhibition of Rat Arterial Smooth Muscle Cell Proliferation by Heparin: II. In Vitro Studies. *R. L. Hoover, R. Rosenberg, W. Haering, and M. J. Karnovsky* ... 578

Effects of Intravenously Infused Histamine on Canine Forelimb Transvascular Protein Efflux Following Adrenergic Receptor Blockade. *George J. Grega, Douglas L. Marciniak, Bhagavan S. Jandhyala, and Richard M. Raymond* ... 584

Caffeine Reversal of Length-Dependent Changes in Myocardial Contractile State in the Cat. *Leonard H. S. Chuck and William W. Parmley* ... 592

Transmural Variation in Autoregulation of Coronary Blood Flow in Hyperperfused Canine Myocardium. *Roger B. Boatwright, H. Fred Downey, Fouad A. Bashour, and George J. Crystal* ... 599

Effects of Calcium on the Sarcomere Length-Tension Relation in Rat Cardiac Muscle: Implications for the Frank-Starling Mechanism. *Albert M. Gordon and Gerald H. Pollack* ... 610

Ultrastructure of Human Umbilical Arteries: Studies on Arteries from Newborn Children Delivered by Non-smoking, White Group D, Diabetic Mothers. *Inger Asmussen* ... 620

Letters to the Editor ... 627

Erratum ... 630

News from the American Heart Association ... 631

No. 5 (November)

Brief Reviews: Dual Control of Relaxation: Its Role in the Ventricular Function in the Mammalian Heart. *Dirk L. Brutsaert, Phillippe R. Housmans, and Marc A. Goethals* ... 637

Quantitative Correlation between Cell Swelling and Necrosis in Myocardial Ischemia in Dogs. *Donald R. DiBona and Wm. John Powell, Jr.* ... 653

Local Anesthetics and the Role of Sodium in the Force Development by Canine Ventricular Muscle and Purkinje Fibers. *Mario Vassalle and Mohit Bhattacharyya* ... 666

Significance of Sodium, Sympathetic Innervation, and Central Adrenergic Structures on Renal Vascular Responsiveness in DOCA-Treated Rats. *Kathleen H. Berecek, Robert D. Murray, and Franz Gross* ... 675

Atrioventricular Conduction Disturbances during Hypoxia: Possible Role of Adenosine in Rabbit and Guinea Pig Heart. *Luiz Belardinelli, Francis L. Belloni, Rafael Rubio, and Robert M. Berne* ... 684

Intra- and Extracellular K^+ and Na^+ Activities and Resting Membrane Potential in Sheep Cardiac Purkinje Strands. *Shey-Shing Sheu, Michael Korth, David A. Lathrop, and Harry A. Fozzard* ... 692

Effects of Infarcted Myocardium on Regional Blood Flow Measurements to Ischemic Regions in Canine Heart. *Robert H. Murdock, Jr., and Frederick R. Cobb* ... 701

Two Receptor Forms for Ouabain in Sarcolemma-Enriched Preparations from Canine Ventricle. *Nancy V. Wellsmith and George E. Lindenmayer* ... 710
Comparison of Ca^{2+}, Sr^{2+}, and Mn^{2+} Fluxes in Mitochondria of the Perfused Rat Heart. *Douglas R. Hunter, Hirochika Komai, Robert A. Haworth, Mark D. Jackson, and Herbert A. Berkoff* ... 721
An Analysis of the Mechanical Disadvantage of Myocardial Infarction in the Canine Left Ventricle. *Daniel K. Bogen, Stuart A. Rabinowitz, Alan Needleman, Thomas A. McMahon, and Walter H. Abelmann* ... 728
Characterization of Refractoriness in the Sinus Node of the Rabbit. *Charles R. Kerr, Eric N. Prystowsky, David J. Browning, and Harold C. Strauss* ... 742
Role of Prostacyclin in the Preservation of Ischemic Myocardial Tissue in the Perfused Cat Heart. *Haruo Araki and Allan M. Lefer* ... 757
Pharmacokinetic Studies of Taurine in Bovine Purkinje Fibers. *Steven I. Baskin, Paul T. Zaydon, Zebulon V. Kendrick, Tobi C. Katz, and Paul L. Orr* ... 763
Trophic Effect of Norepinephrine on the Rat Portal Vein in Organ Culture. *Peter W. Abel, Angelo Trapani, Octavio Aprigliano, and Kent Hermsmeyer* ... 770
Electrical Activity from the Sinus Node Region in Conscious Dogs. *Robert J. Hariman, Brian F. Hoffman, and Robert E. Naylor* ... 775
The Elastic Modulus of Canine Aortic Valve Leaflets in Vivo and in Vitro. *Mano Thubrikar, William C. Piepgrass, L. Paul Bosher, and Stanton P. Nolan* ... 792
News from the American Heart Association ... 801

No. 6 (December)

Brief Reviews: The Role of Adenosine in the Regulation of Coronary Blood Flow. *Robert M. Berne* ... 807
Mechanism(s) of Altered Mitochondrial Calcium Transport in Acutely Ischemic Canine Hearts. *Louis A. Sordahl and Michael L. Stewart* ... 814
Baroreceptor Function and Changes in Strain Sensitivity in Normotensive and Spontaneously Hypertensive Rats. *Michael C. Andresen, Shunsuke Kuraoka, and Arthur M. Brown* ... 821
Baroreceptor Function in Spontaneously Hypertensive Rats: Effect of Preventing Hypertension. *Michael C. Andresen and Arthur M. Brown* ... 829
The Role of the Renin-Angiotensin System in Mediation of Adrenal Catecholamine Secretion in the Cat Induced by Intrarenal β-Adrenergic Stimulation. *Michael M. Krausz, Giora Feurestein, Nill Feuerstein, and Yehuda Gutman* ... 835
Role of Medullary Hemodynamics in the Natriuresis of Drug-Induced Renal Vasodilation in the Rat. *N. Lameire, R. Vanholder, S. Ringoir, and I. Leusen* ... 839
The Effects of Acetylstrophanthidin and Ouabain on the Sympathetic Adrenergic Neuroeffector Junction in Canine Vascular Smooth Muscle. *Robert R. Lorenz, David A. Powis, Paul M. Vanhoutte, and John T. Shepherd* ... 845
Anticholinergic Effects of Disopyramide and Quinidine on Guinea Pig Myocardium: Mediation by Direct Muscarinic Receptor Blockade. *Michael J. Mirro, Allan S. Manalan, John C. Bailey, and August M. Watanabe* ... 855
The Effect of Increased Vascular Pressure on Albumin-Excluded Volume and Lymph Flow in the Dog Lung. *James C. Parker, Howard J. Falgout, Francis A. Grimbert, and Aubrey E. Taylor* ... 866
Relationship of Cardiac Oxygen Usage, Adenosine Content, and Coronary Resistance in Dogs. *Daiji Saito, Debra G. Nixon, Robert B. Vomacka, and Ray A. Olsson* ... 875
Effects of Renal and Hepatic Venous Congestion on Renal Function in the Presence of Low and Normal Cardiac Output in Dogs. *Hans-Joachim Priebe, Joel C. Heimann, and John Hedley-Whyte* ... 883
Carotid Sinus Baroreceptor Reflex Control of the Circulation in Medial Sclerotic and Renal Hypertensive Rabbits and its Modification by the Aortic Baroreceptors. *Jennifer E. Angell-James and M. J. George* ... 890
An Analysis of the Pulsatile Hemodynamic Responses of the Pulmonary Circulation to Acute and Chronic Pulmonary Venous Hypertension in the Awake Dog. *Richard A. Hopkins, John W. Hammon, Jr., Philip A. McHale, Peter K. Smith, and Robert W. Anderson* ... 902
The Effect of Diabetes on Performance and Metabolism of Rat Hearts. *Somsong Penpargkul, Thomas Schaible, Tada Yipintsoi, and James Scheuer* ... 911
Altered Myocardial Mechanics in Diabetic Rats. *Frederick S. Fein, Laura B. Kornstein, John E. Strobeck, Joseph M. Capasso, and Edmund H. Sonnenblick* ... 922
Letters to the Editor ... 934
Acknowledgment to Reviewers ... 936
News from the American Heart Association ... 939
Volume Author Index ... 944
Volume Subject Index ... 946